

Covid-19 in Nigeria: Lockdown Measures and a Chronological Epidemiological Review During the First Wave

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Abstract

This study provides a general epidemiological review of Corona-virus disease in Nigeria during the first wave of the pandemic from February to December 2020 and the efforts of the Federal Government of Nigeria (FGN) to curtail the disease. Coronavirus disease is a highly transmissible and pathogenic viral disease caused by severe acute respiratory syndrome-coronavirus 2(SARS-CoV2), which emerged in Wuhan, China, in December 2019 and later spread worldwide. The first confirmed case of the disease in Nigeria was in February 2020, and the subject was an Italian who works in Nigeria but returned from Milan, Italy to Lagos, after which the virus spread to other parts of the country. In order to curtail the spread of the menace, lockdown measures were introduced by the FGN during the first wave since there is no precise treatment for the disease, thus making prevention critical. Despite these measures, the spread of Covid-19 in Nigeria continues to record a significant surge beyond the first wave.

Keywords: Covid-19, Epidemiology, First wave, Lockdown, Nigeria, Social Responsibility.

Introduction

The severe acute respiratory syndrome corona-virus 2 (SARS-CoV-2) is a type of coronavirus disease belonging to the family Coronaviridae [1]. Coronavirus disease is thought to have originated from bats and spread to people through an unknown medium in Wuhan, China [1, 2]. In December 2019, several patients developed pneumonia of unknown cause in the capital city Wuhan of Hubei province in China, with clinical presentations greatly resembling viral pneumonia, but some rapidly progressed to severe illness and fatal outcomes [3]. These

patients had a history of exposure to Huanan Seafood Wholesale Market, where live animals were also on sale [4]. The disease then rapidly spread from Wuhan to other areas, and by the first week of January 2020, a novel coronavirus was identified by the Chinese Centre for Disease Control and Prevention (CDC) from the throat swab sample of these patients, and the virus was named 2019 novel coronavirus (2019-nCoV). By the end of January 2020, the disease had rapidly spread to other countries, and due to the rapid global spread of the disease, the World Health Organization on 30th of January 2020 declared the outbreak as a

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public health emergency of international concern. On 11th of February 2020, WHO announced that the coronavirus disease 2019 (Covid-19) be the official name of the disease and by 11th of March 2020 declared Covid-19 a pandemic. The Coronavirus Study Group of the International Committee on Taxonomy of Viruses, responsible for naming new viruses, recognized this virus as a sister species to severe acute respiratory syndrome coronaviruses. On February 11 2020, a preprint paper was posted online, designating it as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Ideally, the disease manifests in a person that comes in contact with droplets or/and surfaces containing the virus and can later spread from person to person and manifest symptoms following an incubation period of two to fourteen days. The symptoms of Covid-19 include fever, cough, sneezing, sore throat, difficulty in breathing, and tiredness. The disease is diagnosed by gathering samples from an infected person's upper and lower respiratory tracts and then evaluating them for viral RNA by means of polymerase chain reaction [5]. Also, chest X-rays and computed tomography (CT) scans are used to identify Covid-19 in suspect individuals. Even though there is no precise treatment for various Covid-19 vaccines have now been introduced recently [6]. Prescribed prevention strategies are isolation of the infected persons, proper ventilation, hand washing hygiene, and personal protective equipment [7].

Types of Human Corona Virus

Seven (7) corona-viruses are reported to infect man [8,9]. Four out of these seven viruses (HCoV-NL63, HCoV-229E, HCoV-OC43, HKU1) are very common and are associated with less risk and mild respiratory illnesses in humans but can cause long term illnesses. In comparison, the other three viruses, namely the Middle East Respiratory Syndrome Coronavirus (MERS-CoV), Severe Acute Respiratory Syndrome Coronavirus (SARS-

CoV) and Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV-2), which cause MERS-CoV Disease, SARS-CoV disease, and Covid-19 respectively, are associated chronic respiratory illnesses like shortness of breath and can also cause death. SARS-CoV-2, which causes Covid, is less virulent than the virus that causes SARS and MERS diseases but more severe than HCV [10]. Between 2019 and now, five variants of the SARS-CoV-2, which causes Covid-19, have been identified to have spread globally. These variants are the alpha variant (referred officially as B.1.1.7), first found in London and Kent, the beta variant (referred officially as B.1.351) found in South Africa, the gamma variant (referred officially as P.1) first found in Brazil, the delta variant (referred officially as B.1.617.2) first found in Indian and omicron variant (B.1.1.529) [11-13].

Life Cycle and Transmission of SARS-CoV-2

SARS-CoV-2 has a single-stranded RNA genome enclosed in nucleocapsid (N) protein and three other surface proteins: membrane glycoprotein (M), an envelope protein (E), and Spike protein. The virus replicates and passes to the lower airways leading to severe pneumonia. The gateway to host cell entry by the virus is via angiotensin-converting enzyme 2 (ACE2) interactions with the Spike protein of the virus in the perfusion state by proteases TMPRSS-2/furin (Figure. 1). The first main transmission of SARS-CoV-2 is via direct exposure to infected animals. Human-to-human transmission is another possible means of transmitting the virus when a person comes close to another person already infected via body fluids and respiratory droplets. The virus can also be transmitted through environmental contamination such as air contaminated with droplets and tiny airborne particles or aerosols containing the virus [14], whereby a person touches the mouth, eyes, or nose from surfaces contaminated with the virus, implying that SARS-CoV-2 remains active on surfaces

people are most likely touch daily. Studies have revealed that the SARS-CoV-2 have an

incubation period of fourteen days [1, 2, 4, 5, 10, 14-16].

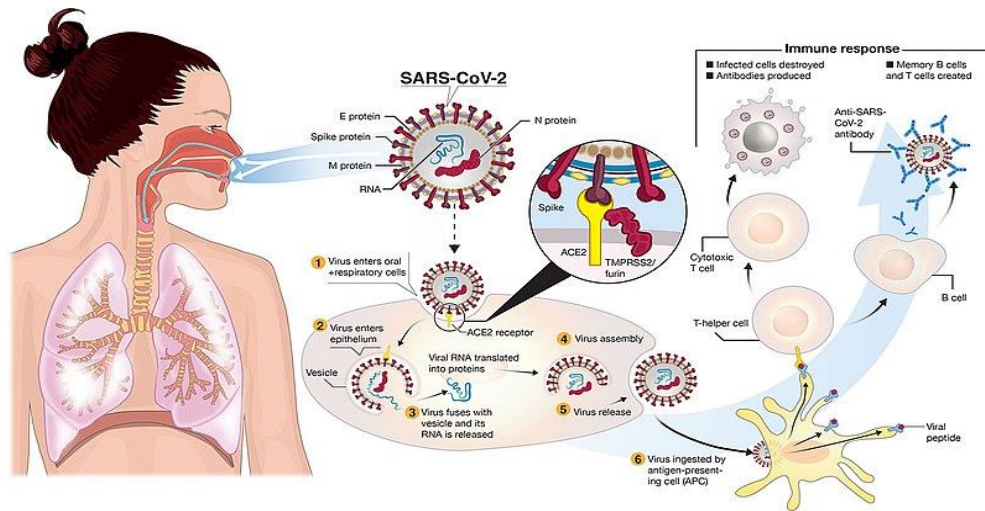


Figure 1. Life Cycle and Transmission of SARS-CoV-2 causing Covid-19

Source: [17]

Symptoms of Covid-19

Covid-19 could be symptomatic or asymptomatic. The most common symptoms associated with Covid-19 often include fever, cough, headache [18], difficulty in breathing, loss of smell and taste [19,20], nasal congestion and runny nose, muscle pain, sore throat, which may manifest within 2-14 days incubation period of the virus. Symptoms may also aggravate into pneumonia, dyspnea, hypoxia, shock, or multi-organ dysfunction [21].

Diagnosis and Treatment

WHO endorsed the use of polymerase chain reaction to diagnose the viral RNA that causes Covid-19. It is recommended that samples be collected and evaluated by this method and when the test shows positive, it is suggested to repeat the test for verification. Chest X-ray and CT scans could also be helpful to identify Covid-19 in suspected individuals [22]. Currently, there are no specific and compelling modalities worldwide for treating Covid-19. However, preventive measures have been recommended as the major way to prevent person-to-person transmission of the disease. The initial step in treating subjects suspected to

have Covid-19 is adequate isolation to prevent them from spreading it to other contacts and healthcare providers. Treatment may also include fluid therapy, oxygen support, and prone positioning.

Preventive Measures

Prevention is paramount particular from infected persons to non-infected persons and/or health workers treating patients with this disease since there is no precise treatment for Covid-19. At first, isolation of a confirmed subject having the disease is suggested. Also, the wearing of face masks by non-infected persons, infected persons as well as by health workers, particularly when in the same area with confirmed subjects, is strongly encouraged. This is because the most significant risk of the disease is transmitted to healthcare professionals as they are the ones dealing with patients daily. According to WHO, the precautions to be taken to prevent the transmission of Covid-19 are outlined below:

1. Keep a physical distance of at least 1 meter from others, even if they don't appear to be sick, and avoid crowds and close contact.

2. Wear a properly fitted facemask when physical distancing is not possible and in when in poorly ventilated settings.
3. Wash hand frequently with soap and water or rub hand with an alcohol-based sanitizer.
4. Cover your mouth and nose with a bent elbow or tissue when you cough or sneeze.
5. Self-isolate if you develop symptoms or test positive for Covid-19 until recovery.
6. Get vaccinated as soon as possible and follow local guidance on vaccination [4].

Hence, it is accurate to state that prevention of Covid-19 includes isolation, proper ventilation, hand hygiene, and use of personal protective equipment, especially as surgical masks, eye protection, gloves, and gowns.

Covid-19 Outbreak in Nigeria

Nigeria, officially referred to as the Federal Republic of Nigeria (FGN), is a West African country covering an area of 923,769 square kilometers (356,669 sq mi) and with a population of over 200 million, making it the most populous Africa country. The country is situated geographically between the Sahel to the North, and the Gulf of Guinea to the South in the Atlantic Ocean. In relation with other African countries, Nigeria borders Niger in the north, Chad in the northeast, Cameroon in the east, and Benin in the west. Nigeria comprises 36 states, including the Federal Capital Territory, located in Abuja. The largest city in Nigeria is Lagos and one of the largest metropolitan areas in the world and the second-largest in Africa. The Nigeria Federal Ministry of Health confirmed the Covid-19 outbreak in Lagos State, the country's largest commercial city. The outbreak was confirmed on the 27th of February, 2020, was the first case to be reported in Nigeria after the outbreak in China. The subject was 44-year-old Italian citizen who arrived at the Murtala Muhammed International Airport, Lagos, Nigeria at 22:00 (GMT+1) on February 24, 2020, aboard a Turkish airline from Milan Italy, and travelled to his company site in Ogun State, a neighboring state to Lagos

State on February 25, 2020. On 26th February, he reported at the staff clinic in Ogun State, and there was a high index of suspicion by the managing physician who referred him to the Virology Laboratory of the Lagos State University Teaching Hospital, part of the laboratory network of the Nigeria Centre for Disease Control (NCDC) where he was confirmed to have Covid-19 [23].

Methods

The monthly epidemiological data report of Covid-19 cases in Nigeria, which includes a number of contact tracing, number of laboratory tests, number of confirmed cases, number of discharge cases, and number of death from February to December, 2020, were gathered from the daily publications of the Nigeria Centre for Disease Control (<https://ncdc.gov.ng/>) and were compiled into a monthly report for this study.

Epidemiological Report and Concept of Lockdown

During the first wave of the pandemic, the Nigerian government put some strict measures to help fight the spread of the virus. The exercise entails the closure of all activities-based centers such as schools, hotels, clubs, and religious houses that could make a sizable number of people come together. In addition, directives such as social distancing, banning of the congregation of more than 20 people, and compulsory usage of the face mask, particularly in public places, were enforced.

Results

The monthly epidemiological report of Covid-19 cases and lockdown measures put in place by the government of the country to curb the spread of the disease during the first wave are presented below.

Epidemiological Report of Covid-19 Case in Nigeria for February 2020

1. One case of Covid-19 was confirmed in Nigeria on 27th February 2020 announced

by the Minister of Health in a press briefing at 9.30 (GMT+1) on 28th February 2020.

2. A multi-sectorial National Emergency Operations Centre (EOC) was activated at level 3, which is the highest level of response in the country for public health emergencies. This was led by NCDC. The NCDC deployed two Rapid Response Teams to Lagos and Ogun States respectively on 28th February 2020 for the purpose of contact tracing.
3. The confirmed case was managed at the Infectious Disease Hospital (IDH), Yaba,

Lagos State, a designated treatment facility for Covid-19.

4. A total of thirty (30) contact tracing was documented. Six (6) were from Lagos State where the index subject first was recorded, and twenty-four (24) in Ogun State a neighboring state where the index subject resided after arrival, out of which five (5) were health care workers.
5. There was no death case recorded for the month of February 2020 (Table 1).

Table 1. Epidemiological Report of Covid-19 Case in Nigeria for February 2020

States	Laboratory confirmed Test	Death	Contacts under follow-up	HCW Contacts under follow-up	Total contacts under follow-up
Ogun	1	0	19	5	24
Lagos	0	0	6	0	6

HCW- Health care worker

Epidemiological Report of Covid-19 case in Nigeria for March 2020

1. As at the end of March 2020, Covid-19 had spread from Lagos and Ogun States to other states in the country, and isolation centers were set-up to isolate confirmed subjects of Covid-19.
2. From 1st to 31st of March 2020, 139 cases of Covid-19 were confirmed in 12 States of the Federation: Lagos recorded 82 cases, FCT (28), Oyo (8), Kaduna (3), Ogun (4), Bauchi (2), Edo (2), Enugu, (2), Osun (5), Benue (1), Ekiti (1) and Rivers (1) to give a total of 139 confirmed cases by the end of March 2020.
3. Out of the 139 confirmed cases, 9 (7%) were discharged cases, 128 (92%) were under intensive care, and 2 (1%) were death cases. From the nine (9) discharged cases, two (index and second) of the cases were recorded in Ogun State and were managed at the Lagos State intensive care unit, while Six (6) were in Lagos State.

4. Out of the 139 confirmed cases, 83 (60%) had travel history to high-risk countries, 18 (13%) were known contacts of confirmed cases, while 38 (27%) had incomplete epidemiological information. Also, 66% were males, 34% were females, and were within the age of 51 and 60 years.
5. The two (2) death cases reported were from FCT, Abuja (Figure 2).
6. By the end of March 2020, total number of active Covid-19 cases was 130.

Lockdown Measures

After the country recorded her first Covid-19 death case from the Federal Capital Territory (Abuja) in March 2020, the FGN in a move to combat the spread of the disease eventually announced a lockdown on March 30, 2020, which took immediate effect in three (3) states of the Federation: Lagos, Ogun, and Abuja. President Muhammadu Buhari announced and directed the cessation of movements in these 3 states for an initial period of 14 days with effect from 23:00 (GMT+1), 30th March 2020.

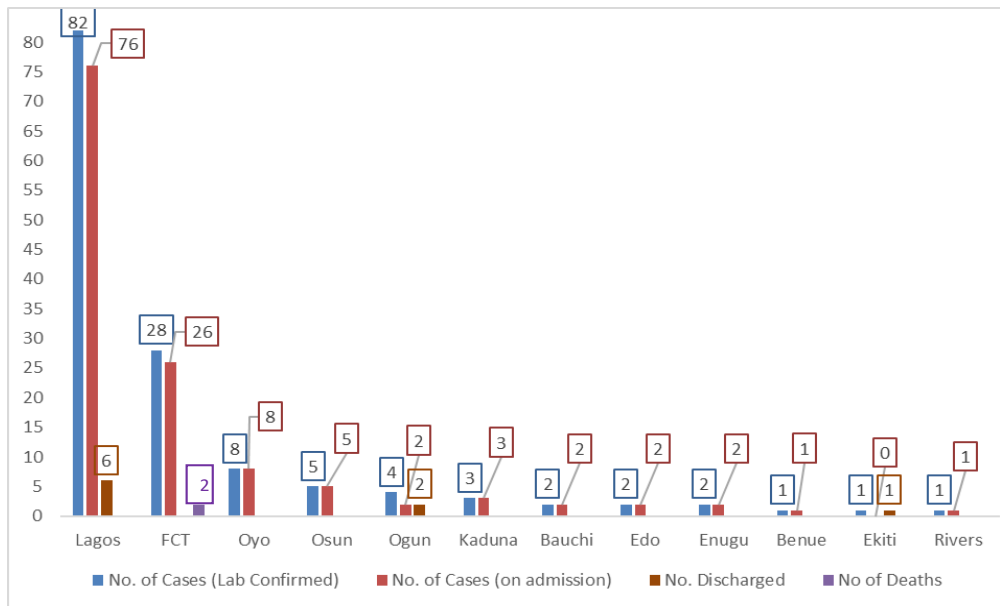


Figure 2. Epidemiological Report of Covid-19 in Nigeria at the end of March 2020

Epidemiological Report of Covid-19 Case in Nigeria for April 2020

1. By April 2020, Covid-19 had spread to 35 out of the 36 states with the FCT inclusive. Kogi State was the only state with no record of the Covid-19 case.
2. From 1st to 30th April, the number of new confirmed cases of Covid-19 was 1793, giving a total number of 1932 confirmed cases across the states from February to 30th April.
3. Out of the 1932 total confirmed cases recorded since the index case, Lagos State remained the epic center with 976 confirmed cases, Kano (219), FCT (178), Gombe (76), Borno (66), Ogun (56), Edo (44), Katsina (40), Bauchi (38), Sokoto (36), Kaduna (35), Osun (34), Oyo (23), Akwa Ibom (16), Rivers (13), Kwara (11), Delta and Ondo, Ekiti and Taraba (9 respectively), Jigawa (7), Bayelsa (5), Zamfara (4), Enugu and Nasarawa (3 respectively), Abia, Adamawa, Ebonyi, Kebbi, Niger (2 respectively), Anambra, Benue, Imo, Plateau, and Yobe (1 case respectively).

4. 319 (16.51%) discharged cases were recorded, and these were recorded in only 17 out of the 36 states. Lagos State recorded the highest number of discharged cases (199), while Anambra and Sokoto States recorded the least number of discharged cases (1 case, respectively).
5. 58 (3%) death cases were recorded at the end of April 2020.
6. The total number of active cases at the end of April was 1555 (Table 2).

Lockdown Measures

Due to virus's rapid spread to almost the thirty-six states in Nigeria, the FGN in April declared a nationwide lockdown as a national response to the Covid-19 epidemic in April. The President announced this on April 27, 2020, with effect from 4th to 17th May, spanning two weeks. This was later followed with a gradual easing of the lockdown measures in phases in the first three states (FCT, Lagos, and the Ogun States) to record Covid-19 cases. In addition, an overnight curfew from 22:00 (GMT+1) to 6:00 (GMT+1) was also imposed in these states.

Table 2. States with Reported Laboratory-Confirmed, Recoveries, Deaths, and Active Cases of Covid-19 for Month of April 2020

State	No of Confirmed Cases	No of Discharged Cases	No of Death Cases	No of Active Cases
Lagos	976	199	21	756
Kano	219	0	3	216
FCT	178	36	3	139
Gombe	76	0	0	76
Borno	66	0	6	60
Ogun	56	8	1	47
Edo	44	10	3	31
Katsina	40	0	2	38
Bauchi	38	6	0	32
Sokoto	36	1	4	31
Kaduna	35	6	1	28
Osun	34	18	3	13
Oyo	23	9	2	12
Akwa Ibom	16	10	2	4
Rivers	13	2	2	9
Kwara	11	2	0	9
Delta	9	4	2	3
Ondo	9	3	0	6
Ekiti	8	2	1	5
Taraba	8	0	0	8
Jigawa	7	0	1	6
Bayelsa	5	0	0	5
Zamfara	4	0	1	3
Enugu	3	2	0	1
Nasarawa	3	0	0	3
Abia	2	0	0	2
Adamawa	2	0	0	2
Ebonyi	2	0	0	2
Kebbi	2	0	0	2
Niger	2	0	0	2
Anambra	1	1	0	0
Benue	1	0	0	1
Imo	1	0	0	1
Plateau	1	0	0	1
Yobe	1	0	0	1
Total	1932	319	58	1555

Epidemiological Report of Covid-19 Case in Nigeria for May 2020

The number of confirmed cases, number of discharged/recovery cases, number of death and number of active cases of Covid-19 across the states in Nigeria as at May 2020 are presented in Table 3.

1. By end of May 2020, Covid-19 had spread to 35 states of the Federation plus the FCT.
2. Kogi State which reported no active case in past months recorded first case of Covid-19 in May 2020. Two (2) confirmed cases were reported in this state.
3. As of 30th May 2020, the number of confirmed cases of Covid-19 increased across the country by 8230 and amounted to a total number of 10,162 confirmed cases from February to May.
4. A total number of 3007 recovery/discharged cases were recorded in 35 states including the FCT and with exception of Kogi State. Out of these discharged cases, Lagos State recorded the highest number (825 = 27.44 %) while Benue had the least (1= 0.03%).

5. Twenty-nine (29) states recorded at least one death case by the end of May.
6. Lagos State recorded the highest number of death cases (54) which constituting 18.81% out of the 287 overall number of death cases recorded in the country so far.
7. No death cases were reported in Ebonyi, Imo, Enugu, Taraba, Abia, Benue, and Kogi States.
8. By the end of May, The total number of active Covid-19 cases by the end of May was 6,868.

Lockdown Measures

A gradual easing of the lockdown was extended to other states of the federation. This phase is regarded as the first phase of the gradual easing of the lockdown to allow individuals and organizations on essential services to render services within a stipulated and regulated time while observe the preventive measures during the course. However, the overnight curfew introduced between 22:00 (GMT+1) and 6:00 (GMT+1) was still placed.

Table 3. States with reported laboratory-confirmed recoveries, deaths, and active cases of Covid-19 for month of May 2020

State	No of confirmed cases	No of discharged cases	No of death cases	No of active cases
Lagos	4943	825	54	4064
Kano	954	240	45	669
FCT	660	182	19	459
Katsina	364	68	14	282
Oyo	292	97	6	189
Edo	284	69	13	202
Ogun	278	149	9	120
Borno	271	167	26	78
Jigawa	270	135	5	130
Kaduna	258	157	8	93
Bauchi	238	220	8	10
Rivers	206	59	14	133
Gombe	161	122	6	33
Sokoto	116	96	14	6

Plateau	105	53	2	50
Kwara	88	37	1	50
Delta	83	17	8	58
Zamfara	76	71	5	0
Nasarawa	62	18	2	42
Yobe	52	24	7	21
Akwa Ibom	45	14	2	29
Osun	45	35	4	6
Ebonyi	40	8	0	32
Adamawa	38	20	4	14
Imo	36	14	0	22
Kebbi	33	29	4	0
Niger	32	9	1	22
Ondo	25	20	2	3
Bayelsa	21	7	1	13
Ekiti	20	16	2	2
Enugu	18	12	0	6
Taraba	18	10	0	8
Anambra	11	3	1	7
Abia	10	3	0	7
Benue	7	1	0	6
Kogi	2	0	0	2
Total	10162	3007	287	6868

Epidemiological Report of Covid-19 Case in Nigeria for June 2020

1. A total of 15,532 new confirmed cases were recorded from 1st to 30th of June 2020, thus making the total number of confirmed cases so far to be 25,694. This increase was by 60.45%.
2. Lagos State remains the state with the highest number of confirmed cases (10,510) followed by FCT, Oyo, Kano, Edo, Rivers, with a record above a thousand confirmed cases. Twenty (20) states (Niger, Osun, Sokoto, Bayelsa, Nasarawa, Kwara, Enugu, Ondo, Abia, Jigawa, Imo, Plateau, Ebonyi, Borno, Gombe, Bauchi, Katsina, Kaduna, Ogun and Delta) recorded above a hundred (100) confirmed cases while ten (10) states (Kogi, Taraba, Ekiti, Yobe, Benue, Anambra, Zamfara, Kebbi, Adamawa, and

Akwa Ibom) recorded less than a hundred cases of Covid-19 by 30th of June 2020.

3. Total number of discharged cases was 9,746. Also, Lagos State topped the list (1,603 = 16.44%) of the total number of discharged cases followed by the FCT (Abuja) with 570 (5.85%) number of discharged cases. There were also discharged cases recorded in other states except in Kogi State.
4. The total number of death cases from Covid-19 across the Federation increased from 287 in May to 590 by the end of June and were recorded only in 34 states while the remaining two states (Kogi and Taraba) recorded no death case.
5. By the end of June 2020, a total number of active cases of Covid-19 in Nigeria was 15,358 (Table 4).

Lockdown Measures

June 29, 2020, the FGN extended the easing of the lockdown (second phase) by additional 4

weeks and approved interstate movement outside curfew hours with effect from 1st July, 2020.

Table 4. States with Reported Laboratory-Confirmed, Recoveries, Deaths, and Active Cases of Covid-19 for Month of June 2020

State	No of Confirmed Cases	No of Discharged Cases	No of Death Cases	No of Active Cases
Lagos	10,510	160	12	8779
FCT	1870	570	30	1267
Oyo	1380	696	12	672
Kano	1216	931	52	233
Edo	1105	288	39	778
Rivers	1056	622	38	396
Delta	965	190	23	752
Ogun	826	571	19	236
Kaduna	766	532	12	222
Katsina	557	285	23	249
Bauchi	503	449	12	34
Gombe	503	352	19	132
Borno	493	422	32	39
Ebonyi	438	357	3	78
Plateau	382	197	10	175
Imo	332	40	6	286
Jigawa	318	307	6	5
Abia	310	207	3	100
Ondo	292	102	19	171
Enugu	261	73	6	182
Kwara	217	131	6	80
Nasarawa	213	113	8	92
Bayelsa	205	100	14	91
Sokoto	151	119	15	17
Osun	127	48	5	74
Niger	116	37	7	72
Akwa Ibom	86	5	2	30
Adamawa	84	47	6	31
Kebbi	79	58	7	14
Zamfara	76	71	5	0
Anambra	73	57	9	7
Benue	59	30	1	28
Yobe	59	48	8	3
Ekiti	43	29	2	12
Taraba	19	10	0	9
Total	25,694	9,746	590	15,358

Epidemiological Report of Covid-19 Case in Nigeria for July 2020

1. Twenty-two thousand seven hundred and seven (22,707) active cases were recorded out of 43,151 total confirmed cases by the end of July 2020.
2. Out of the 43,151 total number of confirmed cases recorded at the end of July, there were 19,565 Covid-19 discharged patients in which Lagos State recorded the highest number of Covid-19 discharged (2,148) cases. Abuja, Oyo, Edo, Rivers, Kano, Delta, Kaduna, Ogun, Plateau and Ondo States, recorded between 1094 to 1801 discharged cases.
3. Kogi State recorded discharged cases for the first time as three (3) patients out of the five active cases in the state recovered.
4. The total number of death cases was put at 879 by the end of July. Thirty-five (35) states, including the FCT recorded one or more death cases of Covid-19.
5. Kogi State recorded 2 death cases for this first time.
6. At this period, Taraba State remained the only state with no death record during this period (Table 5).

Lockdown Measures

7. On July 27, 2020, the second phase of the lockdown ease was extended by an additional one week.

Table 5. States with Reported Laboratory-Confirmed, Recoveries, Deaths, and Active Cases of Covid-19 for Month of July 2020

State	No of Confirmed Cases	No of Discharged Cases	No of Death Cases	No of Active Cases
Lagos	15,121	2,148	192	12,781
FCT	3,803	1,122	42	2,639
Oyo	2,760	1,286	27	1,447
Edo	2,292	1,800	82	410
Rivers	1,791	1,438	52	301
Kano	1,597	1,258	53	286
Delta	1,510	1,359	43	108
Kaduna	1,457	1,176	12	269
Ogun	1,394	1,095	23	276
Plateau	1,188	519	19	650
Ondo	1,155	548	24	583
Enugu	807	425	18	364
Ebonyi	785	596	24	165
Kwara	753	213	19	521
Katsina	742	457	23	262
Borno	613	569	35	9
Gombe	607	524	23	60
Bauchi	560	520	13	27
Abia	545	426	5	114
Osun	524	266	12	246
Imo	468	119	9	340
Benue	346	58	6	282
Bayelsa	328	279	21	28

Jigawa	322	308	11	3
Nasarawa	317	223	8	86
Niger	223	133	12	78
Akwa Ibom	221	121	7	93
Adamawa	163	85	9	69
Sokoto	154	137	16	1
Anambra	135	75	12	48
Ekiti	132	55	2	75
Kebbi	90	79	7	4
Zamfara	77	71	5	1
Yobe	67	54	8	5
Taraba	54	11	0	43
Cross River	45	9	3	33
Kogi	5	3	2	0
Total	43,151	19,565	879	22,707

Epidemiological Report of Covid-19 Case in Nigeria for August 2020

1. 54,008 total confirmed cases of Covid-19 were reported by 31st August 2020. Lagos State remained the state with the largest number of confirmed cases with over 18,000 cases reported, Abuja was with over 5000 cases, Edo, Plateau, Kaduna, and Rivers had less than 3000 confirmed cases, Delta, Kano, Ogun, Enugu, and Ondo recorded less than 2000 cases while the remaining 25 states recorded less than one thousand cases whereas Kogi State recorded only 5 confirmed cases (Table 6).
2. Forty-one thousand six hundred and thirty-eight (41,638) recovery cases were recorded across the states and the FCT.
3. The death cases were 1013 across the federation.
4. Taraba State recorded the first Covid-19 death case in the state. This later increased to 5 by the end of August 2020.
5. There was decrease in the number of Covid-19 active cases (11,357) by the end of August and for the first time in the country. The number of active cases of Covid-19 in the Federal Capital Territory i.e., Abuja (3,583), surpassed Lagos State (2,705) at the end of August 2020 (Table 6).

Lockdown Measures

On the 6th of August 2020, the FGN, through the secretary to the Government of the Federation (SGF), announced a further extension in easing the second phase of the lockdown by an additional four (4) weeks.

Table 6. States with Reported Laboratory-Confirmed, Recoveries, Deaths and Active Cases of Covid-19 for Month of August 2020

State	No of Confirmed Cases	No of Discharged Cases	No of Death Cases	No of Active Cases
Lagos	18,138	15,231	202	2,705
FCT	5,169	1,536	50	3,583
Oyo	3,118	1,954	37	1,127
Edo	2,584	2,325	100	159
Plateau	2,533	1,395	29	1,109
Kaduna	2,141	1,991	12	138
Rivers	2,141	1,971	57	113
Delta	1,744	1,540	47	157
Kano	1,727	1,537	54	136
Ogun	1,648	1,515	26	107
Ondo	1,539	1,380	31	128
Enugu	1,162	907	21	234
Ebonyi	993	931	27	35
Kwara	966	784	25	157
Katsina	796	457	24	315
Osun	782	734	17	31
Abia	771	697	8	66
Borno	741	671	36	34
Gombe	723	636	23	64
Bauchi	667	581	14	72
Imo	527	193	11	323
Benue	453	216	9	228
Nasarawa	434	298	12	124
Bayelsa	391	348	21	22
Jigawa	322	308	11	3
Akwa Ibom	278	232	8	38
Ekiti	262	203	4	55
Niger	243	216	12	15
Adamawa	228	180	15	33
Anambra	216	168	18	30
Sokoto	159	140	16	3
Kebbi	93	82	8	3
Taraba	87	73	5	9
Cross River	82	73	8	1
Zamfara	78	73	5	0
Yobe	67	59	8	0
Kogi	5	3	2	0
Total	54,008	41,638	1013	11,357

Epidemiological Report of Covid-19 Case in Nigeria for September 2020

1. As at the end of September, the number of total confirmed. Covid-19 cases in Nigeria increased by 8.96% (58,848) against 54,008 recorded in the month of August.
2. The number of discharged cases across the 36 states was evaluated at 50,358 from a total number of 58,848 confirmed cases that was recorded from February to September 2020. Also, Lagos State recorded 30.28% (15,249 cases) of the total number of discharged cases, Abuja recorded 9.88% (4977), while Kogi State recorded the least 0.01% (3) discharged cases.
3. The total number of death cases increased to 1,112.

4. Abuja, which earlier surpassed Lagos State in a number of active cases of Covid-19 in the month of August (3,583 Abuja / 2,705 Lagos) was outnumbered by Lagos State (4008 Lagos / 653 Abuja) as at the end of September.
5. There was a further reduction in the number of active cases (7,378) across the entire federation (Table 7).

Lockdown Measures

The President of the Federal Republic of Nigeria approved the transition into a third phase of the national response to Covid-19 for four weeks with effect from 12.01 (GMT+1) on September 4, 2020, in line with amendments to address economic and socio-political issues reflected in the implementation guidelines.

Table 7. States with Reported Laboratory-Confirmed, Recoveries, Deaths, and Active Cases of Covid-19 for Month of September 2020

State	No of Confirmed Cases	No of Discharged Cases	No of Death Cases	No of Active Cases
Lagos	18,138	15,249	204	4,008
FCT	5,169	4,977	79	653
Plateau	3,118	2,597	33	820
Oyo	2,584	2,337	40	884
Edo	2,533	2,495	107	24
Rivers	2,141	2,244	59	129
Kaduna	2,141	2,324	39	56
Ogun	1,744	1,727	28	95
Delta	1,727	1,737	49	16
Kano	1,648	1,668	54	15
Ondo	1,539	1,545	36	50
Enugu	1,162	1,166	21	102
Ebonyi	993	1,007	30	3
Kwara	966	955	25	56
Abia	796	872	8	15
Gombe	782	747	25	111
Katsina	771	835	24	2
Osun	741	790	17	32
Borno	723	705	36	4
Bauchi	667	668	14	17
Imo	527	535	12	25

Benue	453	413	10	58
Nasarawa	434	325	13	112
Bayelsa	391	373	21	5
Jigawa	322	308	11	6
Ekiti	278	303	6	12
Akwa Ibom	262	274	8	6
Niger	243	232	12	15
Adamawa	228	208	17	23
Anambra	216	213	19	5
Sokoto	159	144	17	1
Taraba	93	89	6	7
Kebbi	87	84	8	1
Cross River	82	74	9	4
Zamfara	78	73	5	0
Yobe	67	62	8	6
Kogi	5	3	2	0
Total	58,848	50,358	1112	7,378

Epidemiological Report of Covid-19 Case in Nigeria for October 2020

1. At the end of October 2020, the total number of Covid-19 confirmed cases in Nigeria was estimated at 62,964, with Lagos being the epic center with the highest number of confirmed cases (21,287) while Kogi State recorded the lowest number of confirmed of cases (5).
2. There was a further increase in a number of discharged cases across the country, and was put at 58,790. Lagos State recorded the

highest number (20,423) of recoveries of patients from Covid-19.

3. There was also a further reduction in the number of Covid-19 active cases by the end of October. The numbers of active cases were 3,028.
4. Death figure across the entire state was 1,146 by the end of October. Lagos recorded the highest death rate (217) followed by Edo State (109) Abuja (81), while Kogi State recorded the least as two (2) subjects which were yet to recover died, thereby leaving the state with no (zero) number of Covid-19 active cases (Table 8).

Table 8. States with Reported Laboratory-Confirmed, Recoveries, Deaths, and Active Cases of Covid-19 for Month of October 2020

State	No of Confirmed Cases	No of Discharged Cases	No of Death Cases	No of Active Cases
Abia	898	872	8	18
Adamawa	257	238	19	0
Akwa Ibom	295	287	8	0
Anambra	277	248	19	10
Bauchi	713	696	14	3
Bayelsa	413	381	21	11
Benue	493	460	11	22
Borno	745	705	36	4

Cross River	87	74	9	4
Delta	1,814	1,737	49	28
Ebonyi	1,049	1,011	30	8
Edo	2,666	2,531	109	26
Ekiti	335	320	6	9
Enugu	1,314	1,269	21	24
FCT	6,118	5,345	81	692
Gombe	937	837	25	75
Imo	617	583	12	22
Jigawa	325	308	11	6
Kaduna	2,655	2,567	43	45
Kano	1,747	1,684	54	9
Katsina	952	928	24	0
Kebbi	93	84	8	1
Kogi	5	3	2	0
Kwara	1,069	1,019	26	24
Lagos	21,287	20,423	217	647
Nasarawa	482	325	13	144
Niger	274	259	12	3
Ogun	2,047	1,922	30	95
Ondo	1,667	1,585	37	45
Osun	929	897	20	12
Oyo	3,451	2,616	43	792
Plateau	3,650	3,503	33	114
Rivers	2,831	2,678	59	94
Sokoto	165	147	17	1
Taraba	146	107	6	33
Yobe	82	68	8	6
Zamfara	79	73	5	1
Total	62,964	58,790	1,146	3,028

Epidemiological Report of Covid-19 Case in Nigeria for November 2020

1. Further increase was recorded in the number of confirmed cases of Covid-19 and was put at 67,412 by the end of November 2020 across the 36 states plus the FCT. In the same vein, a total number of recoveries

from the disease increased from 58,790 in October to 63,055 by the end of November.

2. The death figure in the country slightly increased to 1,173 by the end of November.
3. Active Covid-19 cases at the end of November 2020 slightly increased (3,184) as against 3,028 recorded at the end of October (Table 9).

Table 9. States with Reported Laboratory-Confirmed, Recoveries, Deaths, and Active Cases of Covid-19 for Month of November 2020

State	No of Confirmed Cases	No of Discharged Cases	No of Death Cases	No of Active Cases
Abia	926	908	9	9
Adamawa	261	238	19	4
Akwa Ibom	339	311	9	19
Anambra	285	265	19	1
Bauchi	770	726	14	30
Bayelsa	445	382	21	42
Benue	496	460	11	25
Borno	745	705	36	4
Cross River	90	78	9	3
Delta	1,824	1,737	49	38
Ebonyi	1,055	1,019	30	6
Edo	2,696	2,573	112	11
Ekiti	365	335	6	24
Enugu	1,332	1,290	21	21
FCT	6,770	6,009	83	678
Gombe	938	857	25	56
Imo	662	613	12	37
Jigawa	331	308	11	12
Kaduna	3,064	2,826	47	191
Kano	1,795	1,705	54	36
Katsina	1,030	983	24	23
Kebbi	93	84	8	1
Kogi	5	3	2	0
Kwara	1,102	1,039	29	34
Lagos	23,238	22,185	220	833
Nasarawa	493	325	13	155
Niger	298	276	12	10
Ogun	2,223	2,029	33	161
Ondo	1,728	1,585	40	103
Osun	946	921	21	4
Oyo	3,721	3,343	45	333
Plateau	3,858	3,670	34	154
Rivers	2,985	2,823	59	103
Sokoto	165	148	17	0
Taraba	159	139	6	14
Yobe	100	84	8	8
Zamfara	79	73	5	1
Total	67,412	63,055	1,173	3,184

Epidemiological Report of Covid-19 Case in Nigeria for December 2020

1. Overall, Covid-19 confirmed cases for the end of the year 2020 in Nigeria was documented at 90,147. Kogi State was the only state with no number of an active case of Covid-19 by the end of the year after the three discharged cases and two death cases recorded in July.
2. The total number of discharged cases also increased at the end of December and amounted to 75,044 discharge cases.
3. By the end of the year into the pandemic, all the states plus the FCT recorded at least one Covid-19 death case. The total number

of death cases recorded in the country as at the end of December 2020 was 1,311.

4. Lagos State, which was the epic center that recorded the highest number of total confirmed cases (31,321) throughout the year, by the end of December recorded a progressive increase in the number of discharged/recovery cases (26,795).
5. The FCT (4,391) superseded Lagos (4,279) in the number of an active cases of the disease by the end of the year of the pandemic. Only Kogi and the Cross River States reported no active cases as at the end of the year into the pandemic (Table 10).

Table 10. States with Reported Laboratory-Confirmed, Recoveries, Deaths, and Active Cases of Covid-19 for Month of December 2020

State	No of Confirmed Cases	No of Discharged Cases	No of Death Cases	No of Active Cases
Abia	1,028	968	10	50
Adamawa	424	238	25	161
Akwa Ibom	437	385	9	43
Anambra	328	274	19	35
Bauchi	1,020	860	17	143
Bayelsa	534	421	21	92
Benue	532	469	11	52
Borno	806	738	36	32
Cross River	169	157	12	0
Delta	1,888	1,737	52	99
Ebonyi	1,107	1,072	30	5
Edo	2,902	2,681	117	104
Ekiti	415	395	6	14
Enugu	1,400	1,348	21	31
FCT	12,083	7,588	104	4,391
Gombe	1,338	1,001	37	300
Imo	766	722	13	31
Jigawa	407	368	11	28
Kaduna	5,447	4,708	53	686
Kano	2,324	1,930	68	326
Katsina	1,636	1,429	27	180
Kebbi	173	144	9	20
Kogi	5	3	2	0
Kwara	1,414	1,094	31	289

Lagos	31,321	26,795	247	4,279
Nasarawa	898	325	13	560
Niger	417	320	13	84
Ogun	2,552	2,292	34	226
Ondo	1,843	1,763	41	39
Osun	1,019	965	24	30
Oyo	4,035	3,402	52	581
Plateau	4,997	4,560	44	393
Rivers	3,572	3,209	64	299
Sokoto	380	270	18	92
Taraba	217	187	7	23
Yobe	201	144	8	49
Zamfara	112	82	5	25
Total	90,147	75,044	1,311	13,792

Discussion

Without a doubt the inception of the Covid-19 pandemic has shown precipitated dramatic loss of human life globally and posed an inestimable obstacle to public health, food security, and economic impact [24]. The objective of the study was to give a detailed epidemiological account on how the Covid-19 crisis unfolded in relation to lockdown counter measures. As highlighted in our study findings the spread of the novel Covid-19 in Nigeria indicates an increase in person-to-person transmission and subsequently community transmission of the virus, probably facilitated by the easing of the lockdown as announced by the FGN during the first wave. This is not a new phenomenon, as during the Covid-19 first wave Nigeria was the 5th most-affected African country after South Africa (1,554,466), Tunisia (249,703), Egypt (199,364), and Ethiopia (198,794) and the 77th most affected country in the world; accounting for 0.12% (162,593/129,359,540) of the global Covid-19 pandemic within the same period of time [25]. Although the easing of the lockdown was necessary to keep the economic running and viable since Nigeria as a developing country depends on internally generated revenue as one of the avenues in boosting the country's GDP.

For instance, due to the spread of Covid-19, Nigeria experienced sharp decline in oil prices, pushing the government to introduce policies responding to these developments [26]. The global community implemented a range of measures in a bid to contain the spread of the Covid-19 virus, including closure of international airports, public and private schools, universities, stores and markets, and suspension of public gatherings [3, 4, 10, 14, 16, 24, 27]. Nigeria was no exception as a full lockdown that was placed on March 30, 2020, and the Nigeria's economy reopened gradually in three phases with incremental reductions of traveling and gathering restrictions. Phase 1 started on May 4, phase 2 on June 2, and phase 3 on September 4, which is still being implemented [26]. In our study, it is evident that surge in the number of Covid-19 cases was being driven by the easing of lockdown restrictions. By December 2020, Nigeria had entered the second wave of the Covid-19 pandemic, with daily new cases doubling the peak of the first wave at end-January [26]. Additionally, the increase observed in the number of confirmed cases in the country reflects increase in the testing rate carried out across all states of the country. It would be as much possible to curtail the transmission of the virus if her citizenry were more socially

responsible in complying with the preventive measures of Covid-19 as recommended by the WHO and broadcast by NCDC. The high number of confirmed Covid-19 cases recorded in Lagos than the remaining states of the country may be because the state was the first to record an index case of the virus in the country. Though the country experienced a rise in the number of confirmed Covid-19 cases in the first year of the first wave of the disease, it is interesting to note that remarkable progress was also made in curtailing the spread of the virus as a substantial increase in the number of recoveries or discharged cases with a complementary decrease in the number of active cases particularly from July to November 2021, was recorded especially Lagos State, the epic center of the disease in Nigeria. However, the back-and-forth implementation of the lockdown measure has shown that the Covid-19 crisis had governments around the world operating in a context of radical uncertainty and faced with difficult trade-offs given the health, economic and social challenges it raised [28]. Though the overall death rate was 1,311, this is however relatively low compared to the number of recoveries or discharged cases (75,044) which later (death rate) increased by the end of December. This may indicate that the method of isolation and treatment of subjects with Covid-19 adopted by the FGN was effective. Also, the consistent reduction recorded in the total number of active cases especially from July to November 2020, despite following the increase in the testing rate for Covid-19, may reflect of compliance to safety protocols of Covid-19 by the citizenry as recommended by

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WHO and NCDC. The sudden rise in the number of active cases by the end of December despite the initial decline in the active cases from July to November 2020 may be because the safety protocols of COVID-19 was flouted since the month of December is a yuletide season to commemorate Christmas and coupled with the easing of the nationwide lockdown.

Conclusion

The spread of novel Covid-19 in Nigeria continues to record a significant increase, according to statistics. The covid-19 outbreak has challenged almost all sectors due to the spread of the disease at an alarming rate across Nigeria and the globe; therefore, the rapid spread of this viral disease calls for more strong interventions to avert the continuous spread of the disease in the country, especially with the new omicron variant ravaging the globe. In addition, there is a need for the populace in Nigeria to be more socially responsible in complying with WHO outlined preventive measures of the disease and as well get vaccinated to contain the burden of the virus since there is no cure yet for Covid-19.

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Conflict of Interest

The authors declare there are no conflicts of interest.

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