



COVID-19 Pandemic: Lessons for Forensic Science Experts and the Society, Nigeria's perspective.

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Abstract.

The COVID-19 pandemic undoubtedly had a significant impact on various fields including forensic science. Severe acute respiratory syndrome coronavirus 2 (SARS CoV 2) that causes COVID-19 infection is the direct successor to SARS-CoV-1, the virus that caused the 2002–2004 SARS outbreak. Overall, deaths from SARS-COV1 were approximately just 0.0158% when compared to the total global fatality rate in SARS-COV2 cases. Coronaviruses are a group of closely related viruses that have been shown to cause diseases in both mammals and birds. Human coronavirus was first characterized in the 1960s and is responsible for a high proportion of upper respiratory tract infections in humans, especially children; (Severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS). SARS-CoV or SARS-CoV-1), infected over 8,000 people from 29 different countries and territories, and resulted in at least 774 deaths worldwide, bringing the case fatality rate to 9.675% as at November 2022. While forensic experts primarily deal with the collection, analysis, and interpretation of evidence-based data related to criminal investigations, there are several lessons that could be learned that can positively position forensic experts and society to be ready and prepared for any future pandemic.

■ Keywords: COVID-19. Forensic Science, Society, Vaccination, Nigeria.

Introduction.

In 2019, COVID-19, the respiratory illness responsible for the popular and ongoing COVID-19 pandemic, caused by a virus very similar to SARS was discovered. The virus named severe acute respiratory syndrome coronavirus 2(SARS-CoV-2) is the causative pathogen of forming the COVID-19 (coronavirus disease 2019),

The coronavirus (SARS-CoV-2) at the origin of COVID-19 is said to share more than 70% genetic similarity with SARS-CoV-1 that was at the origin of 2003 SARS.

Some symptoms and complications of COVID-19.

- fever,
- cough,
- fatigue,
- breathing difficulties,
- and loss of smell and taste.

complications

- Pneumonia
- viral sepsis
- Acute respiratory distress syndrome
- kidney failure
- Cytokine release syndrome
- Respiratory failure
- Pulmonary fibrosis
- Pediatric multisystem inflammatory syndrome

COVID-19 Disruption in the world

■ Cumulatively, since the outbreak began, available data has showed that as at 17th of October, 2021, the global death toll from COVID-19 was 4,889,737. While the confirmed cases were 240,070,992, resulting in a case fatality rate of approximately 2.037% and 98% recovery rate.

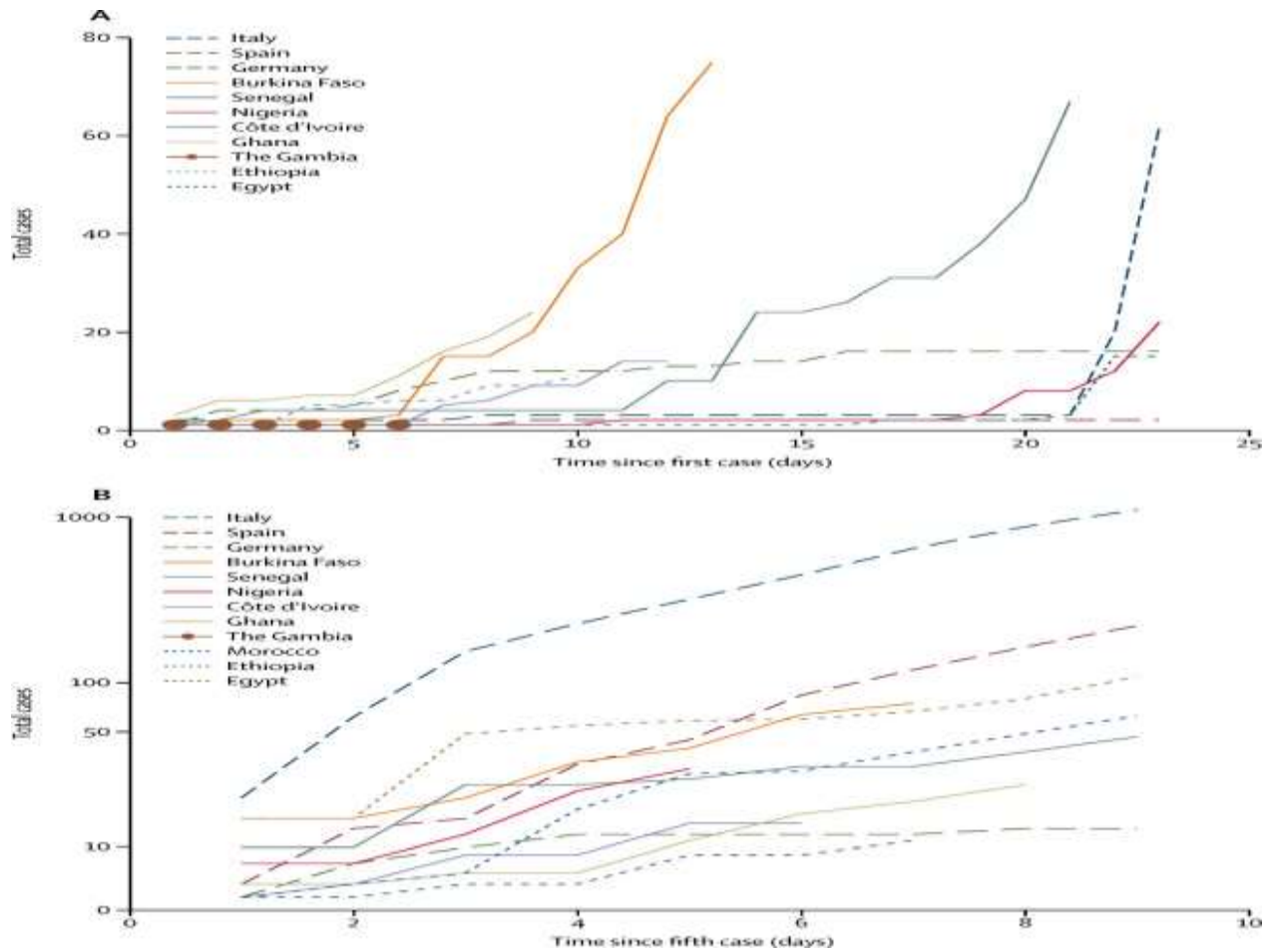
■ COVID-19 Pandemic has affected 221 countries so far.

Covid-19 Pandemic in Nigeria.

The first case (confirmed) in Nigeria was announced on the 27th of February 2020 (from an Italian national testing positive) then on the 9th of march, a second case was reported in Ewekoro Ogun state (from a Nigerian who came in contact with the Italian national).

Country	No of Cases confirmed	Total population	%population infected	No of deaths	%Total Death rate/Population Size (%)	% Death rate/confirmed cases (%)
China	96,579	1,444,216,107	0.00669	4636	0.00033	4.8
United States	44,900,852	332,915,0732	13.48779	724,329	0.21757	1.61
United Kingdom	8,449,165	68,207,116	12.38751	138,792	0.20349	1.67
Germany	4,373,739	83,121,363	5.26187	94,618	0.11383	2.16
Nigeria	209173	212,697,057	0.09834	2804	0.00132	1.34
Ghana	129,258	30,800,000	0.41967	1165	0.00378	0.90
Cameroun	98,402	27,246,549	0.36115	1550	0.00569	1.57
Zimbabwe	132,251	15,092,171	0.87629	4655	0.03084	3.52
South Africa	2,916,179	44,819,778	6.50646	88,587	0.19765	3.04

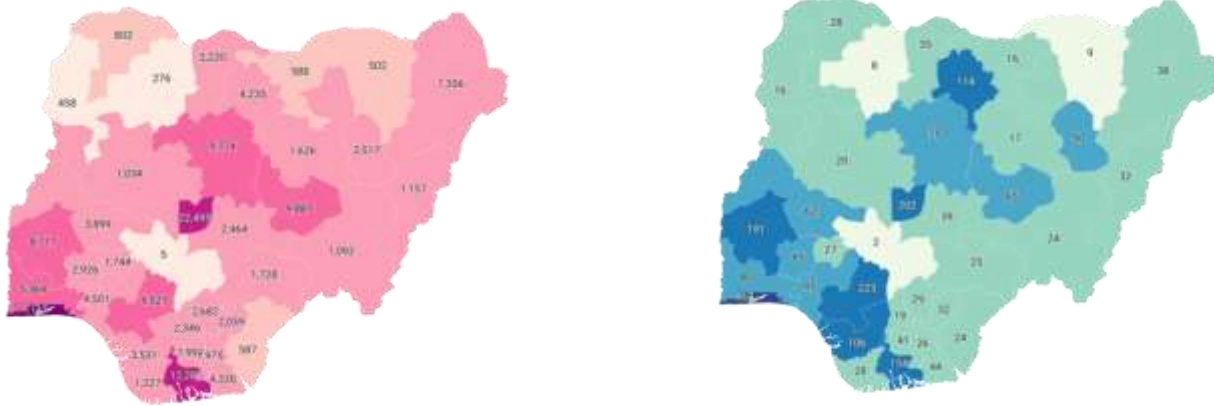
Epidemiological update on COVID-19 IN SOME SELECTED COUNTRIES. Glaringly, case fatality rate in Nigeria is lower compared to a lot of other Countries as indicated in the table above. Conspicuously, Ghana also fared well in the management of COVID-19.



COVID-19 Disruption in Nigeria vis-à-vis Edo State.

- As at 17th of October, 2021, the death toll in Nigeria from COVID-19 became 2,804.
- While the confirmed cases were 209,173. Percentage death rates from COVID-19 when compared to the total number of infected persons was approximately 1.3405%.
- Lagos remained the epicentre of COVID-19 infection in Nigeria.

EPIDEMIOLOGICAL UPDATE ON COVID- 19 IN SOME SELECTED STATES IN NIGERIA.



Cumulative confirmed COVID 19 cases (pink) and deaths (blue and green) in Nigeria by state as of 9th October 2021.

The effect of COVID in Nigeria has been minimal and deaths also minimal as credited to warmer climate, younger population, faster government response and critical experience gained from recent epidemic (Ebola virus).

States/ Country.	No of Cases confirmed	No of Cases on Admission	No of Cases discharged	No of deaths	% DEATH RATE/Confirmed cases
Nigeria	209173	9265	197,089	2804	1.34
FCT, Abuja	22,839	1,767	20,864	208	0.91
Lagos	77,503	3,860	72,947	696	0.89
Edo	6,560	172	6,164	224	3.41

Vaccination

Vaccines deliver viral antigens to trigger immune responses without causing the disease.

On 2nd of March 2021, the first shipment of 4 million Oxford-AstraZeneca COVID-19 Vaccine doses from the COVAX initiative arrived at Nnamdi Azikiwe International Airport in Nigeria and vaccinations began 3 days later on 5th of March.

COVID-19 vaccine is intended to provide acquired immunity against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

COVID-19 vaccine-induced responses are similar to that induced by a natural infection.

Global vaccination progress data showed that 2,840,848,379 (36.2%) have been give their second doses while a total of 3,749,474,527 (47.8%) have had the first dose only.

In Nigeria, data analysis showed that only about 2,359,781 (1.5%) population have taken the second dose of COVID-19 vaccine. 5,118,422 (3.3%) have been only been given the first dose.

As of 28th February 2022, 17,914,944 people have received their first dose of a COVID-19 vaccine, and 8,197,832 have received their second dose.

Lessons learnt from the COVID-19 Pandemic and adjustments to be made should include the following;

1. Adapting to new technologies. The pandemic necessitated the adoption of remote working tools for service delivery and the use of various virtual communication platforms. Forensic science must learn to integrate technology in their work processes.
2. Collaboration and interdisciplinary approaches. A global crisis like the pandemic required a multi-disciplinary approach and collaboration across various disciplines including epidemiology, virology, and public health. Interdisciplinary collaboration will foster proper understanding of complex cases and improve the accuracy of their analysis
3. Data management and analysis. There has to be an improvement of the data management system. Forensic Science experts must produce more robust analytical tools to process and interpret data seeing the pandemic generated unprecedented amount of data for analysis and interpretation.
4. Ensuring safety protocols. There is need for strict safety protocols and measures to protect forensic science professionals and prevent cross-contamination. Rigorous safety guidelines should be implemented in in laboratories and during evidence handling to ensure the wellbeing of all personnel.
5. Preparedness and contingency planning: The COVID-19 pandemic demonstrated the need for preparedness and contingency planning in the face of unforeseen crises. Forensic science experts can learn from this experience by developing robust contingency plans that address potential disruptions to their work, such as natural disasters, technological failures, or health emergencies, ensuring that their services can continue even under challenging circumstances.
6. Public Education: The pandemic further highlighted on the importance of public education in the management of public health issues. Forensic experts must actively engage the public, provide accurate information and explanation on the scientific basis behind their clinical conclusions.
7. Flexibility: Forensic scientists must be flexible enough to adapt to new technologies and advancements to effectively analyse and interpret evidence.
- 8.

Information for Forensic Experts

Scaling up genomic sequencing in Nigeria must be the current focus and trend.

The onset of COVID-19 pandemic has spurred impactful scientific research that gave the world a vaccine.

- Scaling up genomic sequencing in the globe, Africa, Nigeria and Edo State remains crucial in monitoring the evolution of COVID-19 and identifying variants of concern giving room for adequate and timely interventions

Information for the society.

- Following Covid-19 guidelines and protocols is primarily for your safety before it benefits others.
- Hand hygiene is the most important measure to prevent the spread of infections among patients and HCP
- SARS-CoV-2 can remain viable in the air for hours and on surfaces for several days.
- Once you have had COVID-19, you can get it again.
- Global data trends have shown that the pandemic isn't over yet.

Myths and Science

- Spraying and introducing bleach or another disinfectant into your body WILL NOT protect you against COVID-19 and can be dangerous
- Drinking alcohol does not protect you against COVID-19 and can be dangerous
- Adding pepper to your soup or other meals DOES NOT prevent or cure COVID-19
- 5G mobile networks DO NOT spread COVID-19
- You are not too young to get COVID-19
- Even if you are 6 feet apart you should use masks
- Bathing with salt water or drinking salt water does not prevent or cure covid 19
- Exposing yourself to the sun or temperatures higher than 25°C DOES NOT protect you from COVID-19
- The COVID-19 virus can spread in hot and humid climates
- Cold weather and snow CANNOT kill the COVID-19 virus
- The COVID-19 virus CANNOT be spread through mosquito bites
- Ultra-violet (UV) lamps should NOT be used to disinfect hands or other areas of your skin. UV radiation can cause skin irritation and damage your eyes.

CORONAVIRUS INSTRUCTION



Recommendations and conclusions

Vaccination has been a long time scientific intervention and only functions systematically to deliver immunity against infections including COVID-19.

Again COVID-19 is not a death sentence but symptomatic individuals must avail themselves for testing and timely medical interventions.

It is essential that symptoms of COVID-19 infection are treated timely using available therapeutics.

The immune system is in the heart of cell survival and protects the human body from all kinds of invaders. While the pandemic last and even after, the body's immune system must be constantly engineered to deliver maximally by focusing more on balanced diets and prescribed multivitamins. Imbibe daily healthy habits.

Our African countries Researchers must be dedicated to generating accurate and reproducible data on COVID-19 seeing that data gathering is more of a challenge in Africa than in Europe.

African leaders must agree to lead a transformative change in our political and economic spheres that will tend to increase government-private –societal partnership that will be based on trust, experts have said that countries who are going through political, economic and security crises find it more difficult to react and proffer swift interventions to the pandemic.

Selected References.

- 1.'Fantastic step forward': First COVAX vaccines arrive in Nigeria". Al Jazeera. 2 March 2021. Retrieved 14 March 2021.
2. "AstraZeneca vaccine: Latest update about Nigeria vaccination programme and important tins to know". BBC News Pidgin. 4 March 2021. Retrieved 25 April 2021.
3. @UNICEF_Nigeria (5 March 2021). "History is made! Dr. Cyprian Ngong, a Snr. Registrar at the National Hospital, Abuja is the first person to receive the #COVID19 vaccine in Nigeria. The vaccine was administered by

- @drfaisalshuaib, ED of @NphcdaNG during the flag-off of the #COVID19 vaccination drive in Abuja" (Tweet). Retrieved 25 April 2021 – via Twitter.
4. National Primary Health Care Development Agency [NphcdaNG], "COVID -19 Vaccination Update: in 36 States + the FCT. 17,914,944 of total eligible persons targeted for COVID-19 vaccination reached with 1st dose while 8,197,832 of total eligible persons targeted for COVID-19 vaccination reached with 2nd dose (fully vaccinated)" Retrieved 1 March 2022.
5. Ritchie, Hannah; Ortiz-Ospina, Esteban; Beltekian, Diana; Mathieu, Edouard; Hasell, Joe; MacDonald, Bobbie; Giattino, Charlie; Appel, Cameron; Rodés-Guirao, Lucas; Roser, Max., (2020). "Coronavirus (COVID-19) Vaccinations". Our World in Data. Retrieved 14 April 2021.
6. Adebowale, Nike (22 March 2021). "Nigeria receives 300,000 doses of COVID-19 vaccines from MTN – Official". Premium Times. Retrieved 26 April 2021.
7. Adebowale, Nike (6 April 2021). "Nigeria receives 100,000 doses of COVID-19 vaccine from India". Premium Times. Retrieved 26 April 2021.
8. Adepoju, Paul (22 July 2021). "As Nigeria Runs Out of Vaccines, US Dose Donations Start to Arrive in Africa". Health Policy Watch. Retrieved 10 October 2021.
9. "Nigeria to resume COVID vaccinations on Aug. 16". Reuters. 10 August 2021. Retrieved 10 October 2021.
10. Rédaction Africanews (1 August 2021). "Nigeria receives four million Covid vaccine doses from the US". Africanews. Retrieved 10 October 2021.
11. Erunke, Joseph (16 August 2021). "COVID-19: FG flags off Phase 2 vaccination rollout". Vanguard. Abuja. Retrieved 10 October 2021.
12. Adebowale, Nike (8 October 2021). "Nigeria receives 501,600 doses of AstraZeneca vaccines from France". Premium Times. Retrieved 10 October 2021.
13. Obinna, Chioma; Olawale, Gabriel (8 December 2021). "One million COVID-19 vaccine doses expire in Nigeria". Vanguard News Nigeria. Retrieved 10 December 2021.
14. National Primary Health Care Development Agency [@NphcdaNG] (12 April 2021).