COVID-19 PANDEMIC IN NIGERIA: A REVIEW OF THE FIRST THREE MONTHS

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ABSTRACT

Background: The world is still grappling with COVID-19 and African countries are no exception. Despite a slow beginning, cases in Nigeria are starting to soar, affecting more states and draining more resources. To ascertain the current state of the epidemic, we followed the disease as it progressed from index case to the first three months and compared it with selected African and Asian countries, highlighting major policies and actions taken to control it.

Methods: Using publicly available data on COVID-19 from Nigeria, Ghana, South Africa and Taiwan, we plotted graphs of confirmed cases for each country using Microsoft Excel. In the case of Nigeria, data was segregated to further highlight within country variations in disease prevalence. Cumulative number of tests done, total number of confirmed cases and fatalities for each country were used to compute both test positivity and case fatality rates.

Result: Nigeria was seeded from Europe late February and cases have steadily risen to 15,181 as at June 12 with 9,891 (65.2%) active cases, 4,891 (32.2%) recoveries and 399 (2.6%) fatalities. Cases were more prevalent in Lagos (45%), Federal Capital Territory (8%) and Kano (7%). In the first three months of the epidemic, Nigeria's cumulative testing was the least among the four countries compared, had the highest test positivity rate (17.2%) and case fatality rate (2.9%).

Conclusion: Cases of COVID-19 in Nigeria are on the increase with some states bearing a disproportionate burden. There is urgent need for scaling up testing capacity to identify cases, resource mobilization and capacity building to manage them, and effective risk communication to better engage the public on key prevention strategies.

Keywords: COVID-19, SARS-CoV-2, Nigeria, coronavirus, pandemic

1.0 Introduction

The novel coronavirus causing the current pandemic named SARS COV-2 is one of seven known coronaviruses that infect humans (Occupational Safety and Health Administration, 2020). COVID-19, the illness caused by the virus, was first reported in Wuhan, Hubei province of China in December 2019 (Jin et al., 2020). It was declared a Public Health Emergency of International Concern by the World Health Organization on 30th of January and later upgraded to a pandemic status on the 11th of March due to rapid increase in number of people and countries affected (WHO, 2020b). Globally, over seven million confirmed cases have been reported with over 400,000 deaths as at 12th of June (WHO, 2020a). In addition, the global epicenter of the disease had shifted successively from Asia to Europe and now the Americas. Nigeria recorded its first case on 27th February, 2020 and then a second case ten days later (NCDC, 2020a). However, within a period of three months, 36 states including the Federal Capital Territory (FCT) had all reported at least one confirmed case of the disease (NCDC, 2020b).

To better understand the progression of COVID-19 pandemic in Nigeria, we set out to review its pattern of spread, along with a comparative analysis of the epidemic response activities in the first three months of the outbreak with a view to proffer evidence-based insights vis-à-vis lessons learnt from other parts of the world.

2.0 Methods

Publicly available data on daily and cumulative numbers of confirmed cases of COVID-19 were accessed from the websites of Nigeria Centre for Disease Control (NCDC, 2020c), Taiwan Centers for Disease Control (2020), Ghana Health Services (GHS, 2020) and South Africa National Institute for Communicable Diseases (NICD, 2020) between 22nd of April and 12th of June, 2020. Additional data on number of tests done and COVID-19 deaths were collected to support the computation of test positivity and case fatality rates. The test positivity rate is the ratio of positive tests to all tests carried out multiplied by 100, while case fatality rate is the number of deaths as a result of COVID-19 divided by number of COVID-19 confirmed cases multiplied by 100. In the case of Nigeria, data was further segregated by state to enable within country analysis. Each country was followed from Day-1 (i.e. when the index case was reported) to Day-90 of the epidemic. Excel 2010 (Microsoft, Richmond, USA) was used to draw the charts while rates were manually computed.

3.0 Result

Figure 1 shows the number of COVID-19 cases in Nigeria from the arrival of index case in late February to June 12. The country recorded a total of 15,181 cases with 9,891 (65.2%) active cases, 4,891 (32.2%) recoveries and 399 (2.6%) fatalities. Cases were reported from 36 states of the federation including the FCT. There was a considerable lag period between the country's index case reported February 27 and the third case diagnosed on March 16 (18

days). Significant escalation in the number of cases was only observed after this third case, largely due to imported cases among returnee travellers.
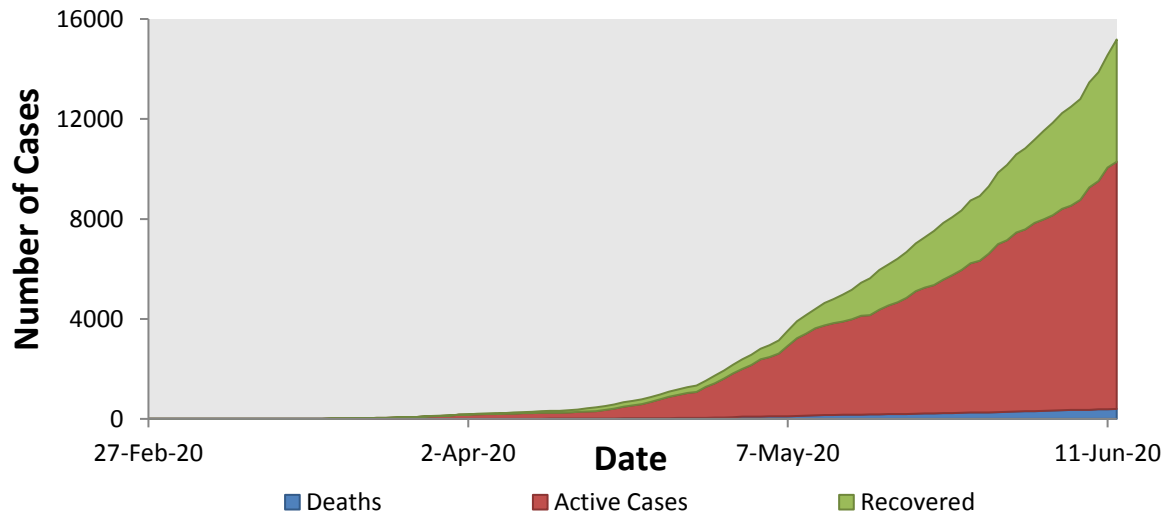

Figure 1: COVID-19 cases in Nigeria since detection of index case on February 27, 2020.
(Data source: NCDC Situation Reports)

Figure 2 shows the distribution of COVID-19 cases in Nigeria since the beginning of the epidemic according to state. The commercial city of Lagos, one of the first states to be affected, has remained the epicentre of the disease and bears the largest burden with 6,840 (45%) confirmed cases. The Federal Capital Territory (FCT) and Kano follow with 1,162 (8%) and 1,078 (7%) cases respectively. As at June 12, cases from other states of the federation accounted for about 40% of all confirmed cases.
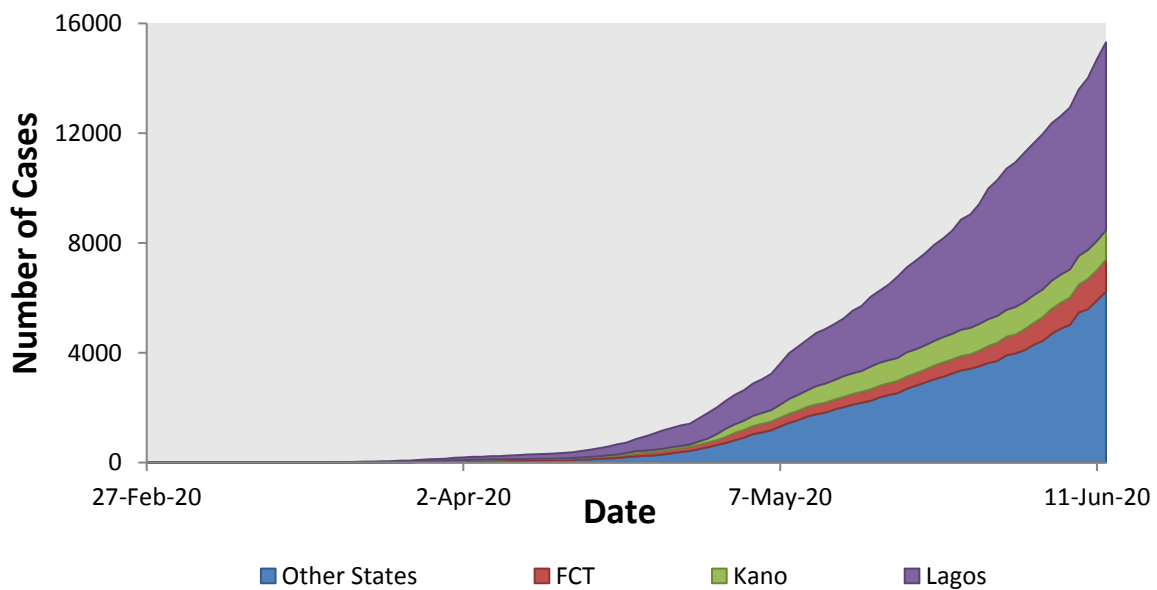

Figure 2: COVID-19 cases in Nigeria since beginning of the epidemic according to state.
(Data source: NCDC Situation Reports)

South Africa and Ghana recorded their index cases on March 5 and 12 respectively. Taiwan, owing to its close proximity to Wuhan where the disease first emerged recorded its index case as far back as January 21. Figure 3 compares the progression of COVID-19 pandemic in each country in the first three months. Nigeria's trajectory is well below that of Ghana's, due to the country's considerable lag interval between its index case and the third case recorded on Day-18.
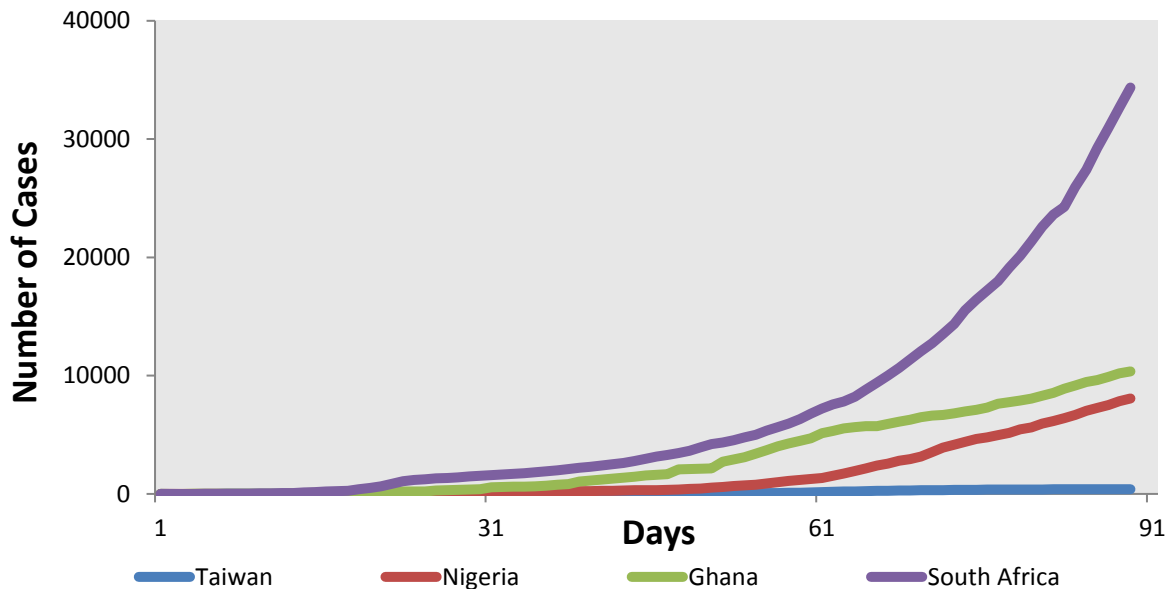

Figure 3: COVID-19 cases in the first three months of the pandemic in selected African and Asian countries.
(Data Source: NCDC, Taiwan CDC, Ghana Health Services and NICD South Africa)

Table 1 compares some of the epidemiologic indices for each country in the first three months of the pandemic. During this period, despite having a comparable number of cases, Nigeria's cumulative testing was only one-fifth that of Ghana's. Taiwan, which had conducted slightly more tests at the time, had significantly less number of cases. Both test positivity rate and case fatality rate were highest in Nigeria, even though in absolute terms, South Africa had the highest number of COVID-19 cases and fatalities.

Table 1: COVID-19 situation in selected African and Asian countries in the first three months of the epidemic

COUNTRY	TESTED (n)	POSITIVES (n)	DEATHS (n)	POSITIVITY RATE (%)	*CFR (%)
Nigeria	46,803	8,068	233	17.2	2.9
Ghana	240,204	10,358	48	4.3	0.5
South Africa	742,742	34,357	705	4.6	2.1
Taiwan	50,124	398	6	0.8	1.5

*CFR = Case Fatality Rate
(Data Source: NCDC, Taiwan CDC, Ghana Health Services and NICD South Africa)

4.0 Discussion

The aim of this study was to review the progression of COVD-19 in Nigeria from the onset and we note that despite the staggering number of confirmed cases at present, as it was noted in a previous study (Adegboye, Adekunle, & Ezra, 2020), the rate of spread in the first month was considerably slow when compared to other African nations. This may be attributed to a rapid response mounted by Nigeria Center for Disease Control, the government agency with the mandate to lead the prevention, detection, and control of communicable diseases (NCDC, 2020e). Timely announcements were issued to the public when the WHO declared COVID-19 a public health emergency of international concern and a series of advisories quickly followed. NCDC activities then were focused on passenger screening at the points of entry using thermal scanners, symptoms check and travel history (NCDC, 2020d). These activities however were not sufficient to prevent importation of COVID-19 into the country and when the index case was diagnosed two days after entry, case isolation and quarantine of close contacts ensued. Several studies that modelled influenza and COVID-19 transmission have shown that although border activities may delay importation, they are generally ineffective in preventing subsequent spread (Quilty, Clifford, Flasche, Eggo, & Group, 2020; Wells et al., 2020).

In response to a growing number of imported cases, Nigeria ordered a series of travel restrictions culminating in a total ban of all international travels effective March 29. Although several studies have questioned the overall benefit of travel restrictions amidst a spreading pandemic (Devi, 2020; Mateus, Otete, Beck, Dolan, & Nguyen-van-tam, 2014; Matteo et al., 2020), given the overwhelming precedence in the case of COVID-19 and a lack of broader containment strategy, it would have been difficult for Nigeria not to have considered them.

Considering the distribution of cases, several reasons might explain why Lagos remained the epicentre of the disease in Nigeria, accounting for nearly half of all confirmed cases. It is the commercial capital of the nation and a coastal state with the busiest air and sea ports. It is also among the first states to be affected. The population density and the mobility of its residents both within and beyond its borders might have all contributed to a rapid spread.

Unlike Lagos, cases in FCT have remained relatively low. Indeed at a point, Kano, despite lagging behind by three weeks, came to record similar numbers. In the meantime, however, Kano has slowed drastically and whether this deceleration is a direct result of containment efforts or due to insufficient testing remains to be ascertained.

In response to a rising number of cases across more states, local response teams were constituted in many states to complement the efforts of NCDC. Those teams primarily focused on state wide activities including case isolation and management, contact tracing, quarantine of exposed persons, community mobilization and capacity building. In all likelihood, those activities must have contributed in slowing down the virus. Several studies have highlighted the importance of case isolation, contact tracing and quarantine of exposed persons in early containment of COVID-19 (Hellewell et al., 2020; Juneau, Pueyo, Bell, Gee, & Potvin, 2020; Nussbaumer-Streit et al., 2020), but as noted by many researchers, to achieve greater success, those measures must be instituted in a comprehensive manner that is timely, efficient and as much as possible, technologically-driven to reduce delays associated with

manual contact tracing (Ferretti et al., 2020; Keeling, Hollingsworth, & Read, 2020; Lai et al., 2020).

In addition, many states in the country went into complete lockdown in a bid to halt the spread. Studies from China and Europe have shown that lockdowns may have demonstrable impact on both incidence and mortality associated with COVID-19 (Figueiredo et al., 2020; Flaxman et al., 2020) but careful consideration has to be made for the overall socio-economic impact of such measures. They must be assessed within the wider social context and the relative benefit they may add to the existing control measures (Mccombs & Kadelka, 2020).

Our study found that testing in Nigeria was grossly low compared to other African countries. For every confirmed case, Nigeria had tested only five others, whereas Ghana had tested 22 others while Taiwan had tested 125 others. Further analysis also showed a non-uniform pattern of testing in Nigeria where some states would go for one or two days without testing or reporting results. Inadequate testing coupled with delay in reporting may have serious implication when ascertaining the true state of the epidemic and this may delay or bias appropriate interventions (Kretzschmar, Rozhnova, & Boven, 2020; Wu, Tang, Bragazzi, Nah, & Mccarthy, 2020).

Nigeria's case fatality rate in the period under review was also found to be the highest. Whether this reflects actual fatality or a bias from under reporting remains uncertain, widespread testing of appropriate populations based on exhaustive eligibility criteria is needed to establish confidence around CFR estimates (Roy, Hans, Don, & Deirdre, 2020).

Lastly, as the country begins gradual easing of lockdowns, there is a compelling need to focus on more sustainable and less restrictive strategies to control the outbreak, particularly the rational use of face masks, frequent hand hygiene and public enlightenment through timely, appropriate and effective risk communication. There is growing body of evidence supporting the community-wide use of mask to reduce SARS-CoV-2 transmission (Anthony & Christine, 2020; Cheng et al., 2020; Esposito, Principi, Leung, & Migliori, 2020; Howard et al., 2020) and given the challenges associated with proper implementation of social distancing measures in Nigeria's setting, such evidence should be given urgent consideration.

Additionally, efforts must be directed towards risk communication to strengthen public awareness. Risk awareness, which can only be achieved through comprehensive risk assessment and communication is the best tool to prevent and slow down the spread of COVID-19 (Chatterjee et al., 2020). Relevant stakeholders, particularly the health workers at the frontline, professional bodies, labour unions and religious leaders must be carried along to ensure comprehensive input in decision making, synergy in actions and timely dissemination of information that will be acceptable to the public (Abrams & Greenhawt, 2020). To achieve meaningful community engagement in the fight against COVID-19, authorities must demonstrate high level of commitment, competence, fairness and transparency in words and actions (Liwei, Huijie, & Kelin, 2020), ensuring that panic is avoided, resources are judiciously used and result are achieved in a timely manner.

5.0 Conclusion and recommendation

COVID-19 spread in Nigeria is still on the increase as Lagos remains the epicentre, accounting for nearly half of all confirmed cases. While early interventions by the NCDC appeared to slow the outbreak in the beginning, numbers are now rapidly increasing with more states recording more cases. Health authorities and key stakeholders at all levels must double their efforts in order to achieve the desired results of controlling the epidemic with minimal health and economic loss.

More specifically, the country must seek for ways to rapidly scale up its testing capacity, utilizing every opportunity to strengthen its healthcare service delivery through comprehensive resource mobilization and capacity building. Risk awareness and community engagement through effective risk communication must be prioritized to avoid rapid escalation of cases as the country began the gradual easing of lockdown measures.

Declaration

All authors have no competing interest(s) to declare.

Authors' contributions

Author 1:   Contributed to the design, data collection, data analysis and draft of abstract, results and discussion sections.

Author 2:   Contributed to the design, collection, data analysis and draft of methodology section.

Author 3:   Contributed to review of literature and draft of methodology section.

Author 4:   Contributed to draft of discussion and conclusion sections.

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