

The COVID-19 Pandemic in Francophone West Africa: From the First Cases to Responses in Seven Countries

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Abstract

Background: In early March 2020, the COVID-19 pandemic hit West Africa. Countries in the region quickly set up crisis management committees and organised drastic measures to stem the spread of the coronavirus. The objective of this article is to analyse the epidemiological evolution of COVID-19 in seven Francophone West African countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea, Mali, Niger, Senegal) as well as the public health measures decided upon during the first four months of the pandemic.

Methods: Our method is based on quantitative and qualitative data from the pooling of information from a COVID-19 data platform and collected by a network of interdisciplinary collaborators present in the seven countries. Descriptive and spatial analyses of quantitative epidemiological data and content analyses of qualitative data on public measures and management committees were performed.

Results: Attack rates for COVID-19 range from less than 10 per 100,000 inhabitants (Benin) to more than 45 per 100,000 inhabitants (Guinea). The spatio-temporal analysis shows three phases of incidence clusters. By the end of June 2020, case numbers had plateaued in some countries (Burkina Faso, Niger, Mali) while others continued to see the number of infections increasing (Benin, Côte d'Ivoire, Guinea, Senegal). The countries all reacted quickly to the crisis, in some cases before the first reported infection, and implemented public measures in a relatively homogeneous manner. None of the countries implemented country-wide lockdowns, but in some cases implemented partial or local containment measures. At the end of June 2020, countries began to lift certain restrictive measures, sometimes under pressure from the general population or from certain economic sectors. All the countries have adopted response plans and organized multiple crisis management committees, although their content and functioning have not always been transparent or easy to understand.

Conclusion: Much research remains to be done in West Africa. It will be necessary to better understand the dynamics of the pandemic, which appears to be largely under control, as well as the effectiveness and implementation of the state responses, which have been rapidly formulated.

Introduction

There has been a split between 'Afro-pessimists' and 'Afro-optimists', with regards to the potential spread of the coronavirus. However, since the first African case was diagnosed in Egypt on 16 February 2020 and the subsequent announcement of the pandemic by the World Health Organization (WHO) on 11 March 2020, little work has so far been published in scientific journals on the situation in Africa [1, 2]. As early as February 2020, initial modelling correctly estimated that the importation of the SARS-CoV-2 virus into Africa would first affect Egypt, as well as Algeria and South Africa [3]. At that time, researchers predicted that Francophone West African countries were at low risk of virus importation due to limited air traffic with China [3]. Africa was expecting to be well prepared, according to members of the *Africa Centres for Disease Control and Prevention* (CDC Africa)[4], by the time the epidemic arrived. Four months after these estimates were made, it remains true that, compared to the rest of the world, the West African region does not seem to have suffered a major epidemic shock, especially if we compare the current situation with that experienced by some countries during the Ebola crisis [5, 6]. The most recent models predict that the 22% of the population in the African continent could become infected with SARS-CoV-2 during the first year of the pandemic, with approximately 150,000 deaths [7] and with peaks of contamination varying from one country to another [8]. The same researchers predict that Francophone West African countries will have few deaths related to the virus during the year: fewer than 800 in Benin, 1000 in Burkina Faso and just over 2200 in Senegal [7]. It has been estimated that the peak of cases in Senegal would occur between 28 May and 15 June 2020 [8]. However, these are all estimates and, at the time of writing this article, we still have little data on the reality of the state of the epidemic in Africa [9, 10] in contrast with the countries that were first affected [11, 12] nor do we have ample data on the effect of public measures, which have been adapted in various ways to their national contexts [1, 4, 9, 13, 14]. As of 21st July 2020, CDC Africa estimates that there were 736,288 cases of COVID-19 in Africa and 15,418 deaths, representing only 5% of all reported cases worldwide. In Africa (54 countries), the case-fatality rate (CFR) has been reported at 2.1%, compared to a 4.2% average CFR in all countries where data are available (n = 215). West Africa alone accounts for 14.8% of cases and 11.2% of deaths on the African continent [15].

Faced with the academic divide between the Afro-optimists who believe that too much has been said about the fragility of health systems in Africa, and the Afro-pessimists who remind us of the disasters caused by the Ebola virus [16, 17], we would like to propose a third way, that of Afro-realism. In order to do so, we describe and analyze the situation in seven Francophone West African countries where our team members are established. The governments of all these countries did not wait until they were overwhelmed by the pandemic, or even the call for public health measures and physical distancing from the WHO on 7th April 2020, to react [18]. Anticipating the arrival of SARS-CoV-2, each government quickly put public measures in place to counter the advance of the virus, even if their populations did not always fully support them. A survey carried out in early April 2020 in 20 major African cities showed that 30% of people were opposed to closing markets, 29% to stopping traffic between cities and 22% to closing places of worship [19]. In Senegal, on the other hand, a survey conducted in early April 2020 showed that 72.5% of people were in favour of a two-week lockdown and 85.6% were very or rather confident in the government's capacity to deal with the crisis [20].

In addition, voices are being raised to question the lack of inclusion and equity in the governance bodies governing the management of the crisis and the public measures taken [21]. Similarly, amid rumours of the exploitation of the virus for political purposes and the ineffectiveness of public health measures and/or treatment, these issues are also being hotly debated in the public sphere. In Niger, for example, some believe that the pandemic is being used for financial reasons: "*politicians are manipulating data to present more positive cases in the hope of winning funding from donors*" [22] In Cameroon, people also question the statistics "*The death numbers from covid-19 is wrong*" [22]. Although the situation differs between countries, and our previous analyses have shown that routine data can be valuable for evaluating public health interventions in West Africa [23, 24], the quality of health data in this region of the world is often debated and brought into question [25]. Frequently side-lined by the debates regarding the epidemiological data, public action against COVID-19 remains understudied today [2]. In early June, a first study in Kenya with a sample of 213 people demonstrated the effectiveness of the policy package on the epidemic's reproductive rate [26]; however there is a lack of similar analysis in the Francophone West African region. The objective of this article is to describe

and analyse the epidemiological evolution of COVID-19 in Francophone West Africa during the first four months of the pandemic, as well as the public measures taken to deal with it.

Methods

This paper analyses quantitative and qualitative empirical data from several sources, mainly collected from a regional platform on COVID-19.

COVID-19 Data Platform

We launched Covid19Africa.com, designed as an information platform to track the SARS-CoV-2 pandemic, on 31 March 2020. Focusing on West Africa (including non-Francophone countries) and Francophone countries throughout Africa, the site is designed to facilitate contextual readings and effective management of data. The objective of the site is to facilitate the open and free sharing of data with a comparative perspective. The platform relies on a network of 26 contributors spread across the countries. A total of 32 countries are subject to daily monitoring of epidemiological data published on WHO recognized sites, official government sites and situation reports (SITREPs). All these public data are compared in order to validate the recognized situation in the countries. International sites (Worldometer, John Hopkins University) were not preferred for this analysis because they publish data that often differs from the actual situation in these countries.

Study area

The analysis presented in this article focuses on seven West African countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea, Mali, Niger and Senegal), chosen because they illustrate the varying dynamics of the disease and various government measures in the same geographical area, and because our team is sufficiently familiar with these contexts to analyse the respective national situations.

Quantitative analyses

The epidemiological data from this study comprise the cumulative number of daily cases of COVID-19, the daily number of deaths and the number of tests performed. The study period is from 28 February 2020, the date of the first case detected in the study area (Nigeria) to 30 June, 2020. The epidemic curves were constructed to describe and compare the trend in each country and a 7-day moving average was applied.

The data are dynamically mapped to visualize the distribution of cases and deaths, using a *Json* program developed by our team that allows the publication, in cartographic form, of country data entered into a shared database. Spatial analyses in the form of bivariate maps [27] and spatiotemporal analyses complement the dynamic maps available at Covid19Afrique.com. The bivariate map combines the attack rate and the number of cases of COVID-19. The spatial and temporal analyses were performed using the spatial scan statistics implemented in SatScan (version 9.4) [28]. This method detects regions with higher than expected disease incidence in time and space by assigning them a relative risk, producing as a result a list of spatiotemporal clusters that can be used to identify the epidemic phases in the study area.

Qualitative analyses

A documentary analysis based on situation reports from country ministries, scientific articles, reports from WHO, CDC Africa, and the national press was compiled to enable the recording and tracking of events and government measures to produce a synthesis of information presented in this article. A qualitative analysis of the content of these documents was carried out in addition to a situational analysis carried out by the researchers present in each of the seven countries. A transversal analysis of the content of these studies was carried out and validated by all the authors of this article.

Results

The Epidemiological Situation at the End of June 2020

The first cases in the ECOWAS zone were identified on 28 February 2020 in Nigeria, followed by Burkina Faso, Niger, Mali and Ghana during the month of March. Measured according to identified case rates, there are three groups of countries: Nigeria and Ghana with more than 10,000 registered cases, followed by Senegal, Guinea and Côte d'Ivoire with 5,000 cases, and the rest of the ECOWAS countries with fewer than 1,000 cases (Fig. 1). Deaths caused by the virus, which have been few in Africa, remain below 100 in all countries except Nigeria.

During the month of April, all seven countries were registering many cases and entering an ascending phase (see Additional files 1 for a figure with a country-specific scale). At the end of April, Guinea, Côte d'Ivoire and Senegal entered an intense ascending epidemic phase, while Burkina Faso and Niger reached their peak (Fig. 2). Since the beginning of May, the epidemics in Burkina Faso and Niger have begun to decline, based on the number of reported cases. By mid-June, both countries had several consecutive days with zero cases detected. In mid-June, Guinea and Senegal appeared to have reached a plateau, but both countries still have a significant daily number of cases. However, Benin and Côte d'Ivoire showed a very different pattern, with a doubling of cases every three days. While for Benin, it is important to put this situation into perspective as the number of cases remains low (Fig. 2 uses the same scale for the seven countries), for Côte d'Ivoire, the situation is more complex to analyse.

During the same period, COVID-19 attack rates ranged from less than 10 per 100,000 inhabitants (Benin) to more than 45 per 100,000 inhabitants (Guinea). The three Sahelian countries (Burkina Faso, Mali, Niger) have the highest case-fatality rates. In Côte d'Ivoire and Senegal, the case-fatality rate remains low, but the epidemic has not yet started to decline by the end of June 2020. Guinea and Benin have comparatively lower rates (Table 1 and Fig. 3).

Table 1
Attack rate and Case Fatality rate of COVID-19 (end of February to end of June 2020)

	Burkina Faso	Ivory Coast	Senegal	Benin	Niger	Mali	Guinea
Attack rate per 100,000 population	4,69	37,15	41,90	9,64	4,44	10,76	45,36
Case fatality rate	5,40	0,71	1,70	1,75	6,23	5,31	0,61

All of these results depend, however, on the detection of cases, and therefore on the number of tests performed, which is highly variable (Table 2). In Burkina Faso, Mali and Niger, the low number of tests, which are only possible to perform in some regional capitals, probably explains a higher case-fatality rate than elsewhere. However, it should be noted that *testing* data are not always available at sub-national level and have only been available since the end of March in most of the countries. Benin is a special case as it is the only country to have been forced to revise its COVID-19 statistics. On 19th May, the country was in fact asked to revise the figures for positive cases from 339 to 130 because 209 people had been declared positive with a rapid diagnostic test (RDT), which the WHO did not recognize as valid.

Table 2
Number of PCR tests per 100,000 inhabitants as of 15 June, 2020

Burkina Faso	Ivory Coast	Senegal	Benin	Niger	Mali	Guinea
29,14	111,29	284,83	38,66	41,50	126,08	124,22

The spatiotemporal analysis shows three temporal phases of clusters of the incidence of COVID-19. This analysis complements Fig. 2 and specifies the most intense periods of the epidemic in each of the seven African countries. The relative risk calculated for each cluster illustrates the risk of occurrence of COVID-19 in a given country. The relative risk is particularly high in Burkina Faso, Niger, Mali and Benin. The analysis confirms a later epidemic phase in Côte d'Ivoire, Guinea and Senegal.

Table 3
Space-time clusters

Cluster	Country	Date first cluster	Cluster end date	Relative risk over the period
1	Burkina Faso	14/03/2020	14/04/2020	3.53
1	Niger	14/03/2020	14/04/2020	3.53
1	Mali	14/03/2020	14/04/2020	3.53
1	Benin	14/03/2020	14/04/2020	3.53
2	Ivory Coast	07/06/2020	30/06/2020	1.49
3	Guinea	21/04/2020	02/06/2020	1.38
3	Senegal	21/04/2020	02/06/2020	1.38

State responses to the pandemic

Government measures against the pandemic

All the countries analysed have planned, and subsequently implemented, several government measures, either before or overlapping with the time of diagnosis of the first national cases (Table 4). In Senegal, an extraordinary meeting of the national epidemic management committee was held on 6 January 2020. In Niger, while the first official case was declared on 22 March 2020, the Council of Ministers of 13 March 2020 had already announced strong measures, such as the (not strictly enforced) obligation of a fourteen-day confinement for travellers coming from countries affected by the virus, a ban on gatherings of more than 1000 people and the suspension of official missions to countries affected by the pandemic. In Burkina Faso, the ban on gatherings and the cancellation of national events introduced on 3 March 2020, led to the cancellation of the National Culture Week, an eagerly awaited biennial event.

In each country, in the course of March 2020, we witnessed a rapid implementation of measures to control travellers, in particular with temperature checks at airports. However, these initial state measures did not entirely limit the spread of the virus, as the first cases observed in the countries were mainly imported from outside (by nationals or foreigners), particularly from Europe. The countries quickly responded to the first diagnoses of COVID-19 on their territories by gradually strengthening the measures in place. For example, in Benin, only three days after the first reported case, the country implemented a systematic and mandatory quarantine of all persons entering the country by air, restricted the issuance of entry visas and closed its land borders. Guinea and Senegal formulated even more restrictive responses: both countries have introduced a curfew, facilitated by the declaration of a state of emergency, with varying hours

of operation. Nevertheless, none of the countries analysed has yet implemented large scale lockdowns throughout their national territory as has been done elsewhere in the world. However, borders between each region were closed very quickly.

Table 4
Date of First Case and First Significant Government Action in 2020

Country	First case	Date of measurement	Nature of the first significant measure
Benin	16th March	1st March	Border temperature control
Burkina Faso	9th March	3rd March	Prohibition of national and international events
Côte d'Ivoire	13th March	4th March	Establishment of a response plan focusing on epidemiological and biological surveillance, prevention, management of potential patients, information and public awareness of compliance with VIDOC prevention measures-19
Guinea	12th March	25th January	Systematic check-ups upon arrival of travellers at International Airport (temperature, hand sanitizer, health questionnaire) and at the port of Conakry.
Mali	25th March	19th March	Prohibition of gatherings Closure of schools and universities
Niger	21st March	13th March	Prohibition of gatherings Self-isolation on return from abroad
Senegal	2nd March	14th March	Prohibition of gatherings

Following the strengthening of the first measures, the trend towards increased strictness continued into April and partially in May 2020. There has been a significant reinforcement of bans everywhere, which are becoming more and more drastic, despite the fact that the number of cases remains very small and that the trends are not exponential (Fig. 2). It is worth noting the obligation to wear masks, the enforced reduction in the number of people on public transport, the closure of markets etc. (Fig. 2). Compared to Europe, which has been relatively unconcerned by religious practices, the decisions in many Francophone West African countries to close places of worship (Benin, Burkina Faso, Côte d'Ivoire, Guinea, Senegal) in some cases has led to tensions between governments and religious representatives (albeit not in Côte d'Ivoire). For example, in Senegal, the closure was highly contested and the decision was quickly lifted; although some Catholic representatives decided to keep their churches closed, the Muslim community reacted in a heterogeneous way, with many places of worship remaining open. In Mali, on the other hand, where links between the Government and clerics have been highly controversial since 2009, due largely to tense debates on the 'family code' in the legal system, and where the government has been discredited by poor management of the recent security crisis, the overwhelming majority of mosques remained open, and many Muslim leaders did not hesitate to speak out against the suspension of prayers in these places of worship. The argument, relayed notably by the radio stations, is that one should not be afraid of illness and therefore 'attack God' by not attending prayers. They have argued, on the contrary, that collective prayers help to eradicate the disease. In Guinea, the establishment of two-tier measures has been astonishing: mosques have been closed while markets remain open.

In each country, the management of the first cases and test procedures were organized from an early stage. Governments announced that care would be free for patients, which has seemed to generally be the case. Most countries have been setting up sites or structures specifically dedicated to patient care, although many began by initially centralizing all medical care in capitals and large, densely populated cities. In Côte d'Ivoire, the analysis of diagnostic tests and the treatment of patients was initially carried out only in Abidjan; the university hospital in Bouaké - another important city in the country - was not operational for tests until the end of May 2020, two and a half months after the first case in the country. In Burkina Faso, only the capital and the second largest city in the country initially had treatment centres. In Mali, three public hospitals in the capital were progressively adapted for case management, and two other public hospitals have been subsequently added. In Guinea, the epidemic treatment centres in the interior of the country were not yet operational as of mid-April and the laboratories first able to detect cases were located in Conakry and in Kindia. Senegal has innovated by very quickly organizing contact tracing and management for COVID-19 positive cases, quarantining suspected cases in hotels. However, the country was quickly overwhelmed by the lack of space, and the government was criticized by some hoteliers for not paying for their services. A process of decentralization of care was then organized at the beginning of May for asymptomatic or mild cases in dedicated non-hospital sites located in Dakar, Thies and Mbour. It was then decided at the end of June 2020 to no longer systematically test the contacts of positive cases and to limit the tests to symptomatic and vulnerable persons. The same logic defined the Guinean choices: hospital care was offered at the Donka National Hospital for serious cases, follow-up of positive cases was provided in hotel facilities, and specific care centres were gradually opened.

In this medical response, while the issue of lack of resources (human and material) is chronic in this region of the world, it quickly intensified as the virus gained ground. On 10 April 2020, Mali launched the "one Malian, one mask" programme, and the President of the Republic announced that he had ordered 20 million washable masks. In Guinea, the situation has been more complicated. At the beginning of April 2020, the country started releasing trainees (volunteers and academics) working in the health system, which reduced the production capacity of public care, while increasing the private labour supply in the city. However the country has already demonstrated, in the context of the Ebola crisis, challenges in coordination between very well-provided diagnostic activities and less effective care activities.

Capitals and large cities have not only been the scene of primary care for the sick. In some countries (Burkina Faso, Côte d'Ivoire, Niger), they were also the target of restrictive measures, as the data on the evolution of the pandemic seemed to show that it particularly affected areas of these countries where large populations are concentrated. For example, in Niger, the wearing of masks in public and para-public services were only made compulsory in Zinder on 5 May and in Niamey, the capital - which has also been subjected to sanitary isolation, mask-wearing has been compulsory in urban transport, markets, supermarkets, shops and public squares since 9 April 2020. In Côte d'Ivoire, the 10 communes of the capital were isolated from the rest of the country on 25 March. Burkina Faso also made the wearing of masks and nose masks compulsory throughout the country, beginning on Monday 27th April 2020. During a visit to the army's sewing factory on Tuesday 21 April 2021, the Prime Minister was assured that this factory, which already produces 5000 masks/day, can multiply its production capacity by three. Many countries have banned travel between regions (Guinea, Côte d'Ivoire, Senegal) without specific authorization, with an exception for the transport of goods. This is notably the case in Benin where a cordon sanitaire isolating the South from the rest of the country was set up on 30 March 2020.

These measures have sometimes given rise to protest movements, the scale of which varied depending on the context, questioning the veracity of the pandemic, refuting certain state measures considered disproportionate in view of the other health problems that these countries encounter, or denouncing their catastrophic socio-economic repercussions. In Niger, for example, violent demonstrations are taking place in Niamey and in the Zinder region to demand the reopening of places of worship, in a context of months of fasting for Muslims. In Côte d'Ivoire, there was the destruction of a screening centre under construction in early April 2020 in a working-class district of Abidjan. In Guinea, on 13 May 2020, the gendarmerie fired on the crowd demonstrating against the roadblocks set up in the town of Coyah (on the outskirts of the capital Conakry), which were the scene of a racketeering scandal involving extracting bribes from the inhabitants for not wearing masks or for passing through, which resulted in about ten deaths. In some cases, these demonstrations led to a relaxation of certain measures, in others not. In Burkina Faso, for example, pressure from shopkeepers led to the cancellation of the closure of markets on 20th April, which had been decided upon three weeks earlier.

Moreover, the months of May and June have been part of a trend towards the easing or even lifting of initial State measures, such as the reopening of cultural venues in Senegal on 11 May 2020 and the reopening of schools in Niger on 1 June 2020. For some countries, the process of lifting these measures have been somewhat hasty, not to say improvised. In Senegal, the announcement of the reopening of schools for examination classes scheduled for 2 June 2020 was cancelled the day before and the reopening was effective on 25 June 2020. The Senegalese President, who was himself under quarantine, announced the lifting of the state of emergency and curfew on 29 June for the following day, with a reinstatement of office hours from 8 a.m. to 5 p.m. However, places hosting leisure activities behind closed doors remained closed, as did public markets, including one day a week dedicated to cleaning. In Côte d'Ivoire, such prevarication has also been present, for example, regarding the end of the *cordon sanitaire* around Greater Abidjan scheduled for 31 May 2020, and finally extended until 14 June 2020 and then lifted on 15 July to allow, according to some, the funeral of the Prime Minister to take place.

Although the role played by popular protests on the lifting of certain restrictive measures has not been refuted, other reasons, frequently political and socio-economic, also explain the easing of state measures. The health-based justifications for lifting these measures seems to have taken little account of the epidemiological curves, which did not change dramatically during this period. For example, in Benin, Côte d'Ivoire or Senegal, Fig. 2 clearly shows that the trends did not change, with or without measurement. For these three countries and for the others, it is as if there was no logical link between the evolution of reported cases and government measures. This lack of logic is sometimes compounded by a lack of consistency in the measures taken.

In Guinea, until the beginning of April, the measures were disorganised and lacked coherence. This was largely the product of thinly-veiled competition between the director of the 'Agence de Sécurité Sanitaire' (Health Security Agency) and the Minister of Health, partly as a result of the importance of this agency in the fight against Ebola, largely supported by donor, working in silos and with little coordination with the Ministry of Health. We have seen, for example, some replications of the response to the Ebola crisis with the implementation of the 'Stop Covid in 60 Days' plan, a replica of the 'Stop Ebola in 60 Days' plan, which had marked the end of the epidemic with its "micro-circling" strategy. In addition, the significant development of diagnostic capacities in Guinea, a benefit induced by the Ebola epidemic, has created a negative consequence in the fight against the pandemic: the abandonment of the community approach and community care. In Côte d'Ivoire and Senegal, for example, we have seen that the lifting of travel restrictions for teachers returning to their home regions, for example, has had the immediate consequence of the virus being transmitted by these individuals. In Mali, the government decided to maintain the second round of legislative elections on 19 April while the epidemic was spreading throughout Africa. In Benin, the *cordon sanitaire* within which the South was constrained was lifted on 11 May 2020 to allow municipal elections to be held on 17 May 2020, while other measures only began to be lifted in early June. In Guinea, the debate on the holding of elections started even earlier. They were initially due to be held on 1 March but were later postponed to the 6 March and then the 15 March. They finally took place on 22 March.

In all the countries (and especially in Guinea), the coinciding of the electoral schedule and the epidemic implies a necessarily political reading of the measures put in place. Moreover, it would seem that it has also been the social and economic consequences of policies that have pushed most countries to reduce or scale down their health measures. Indeed, economic measures were taken very quickly to support households or businesses, for example by postponing the payment of water and electricity bills (Côte d'Ivoire, Burkina Faso, Guinea), by reducing the price of fuel (Guinea), by exempting electricity and water bills from value added tax (Mali), by subsidising the tourist industry (Senegal) or by organising a vast distribution of food (Côte d'Ivoire, Mali, Senegal) to the poorest households (taking advantage of the targeting mechanisms of social safety net programmes). Senegal has, for example, created a 'Fund for the Fight against the Effects of COVID-19' ("FORCE-COVID-19") to be endowed with CFAF 1,000 billion (1.5 billion Euros).

National Health Response Plans

We analysed and compared the health response plans of Burkina Faso, Côte d'Ivoire, Mali, Niger and finally Senegal, due to the lack of data for Benin. The national response plans were mostly devised following the first diagnosed cases of COVID-19 in their respective national territories. Most of them were

launched between March and April 2020. Senegal stands out, however, because it had a response plan in place before the first case of COVID-19 was detected on its soil. It is also the only country to have indicated the period of application of its plan, which officially ended in July 2020.

Countries defined the overall objective of their response plan as enabling them to have the capacity to respond to or control the pandemic. Only Senegal and Mali raise (timidly) the ethical issues associated with the response. The countries have developed their response plan around activities that refer to seven major dimensions: 1) planning, coordination and monitoring, 2) epidemiological surveillance, case investigation and entry point controls, 3) laboratory (biological surveillance), 4) prevention and infection control measures, 5) risk communication (health education) and community engagement/mobilization, 6) case management (including health system strengthening) and 7) evaluation and research (Table 5). However, the dimensions have not been developed at the same stage of response to the pandemic and do not represent the same financial burden between countries (Additional files 2).

Table 5
Budget associated with the different health activities in individual country plans

	Burkina Faso	Côte d'Ivoire	Guinée	Mali	Niger	Sénégal
1. Planning, coordination and monitoring	78,4%	*	*	2,4%	4,3%	3,3%
2. Epidemiological surveillance (including case investigation and port of entry controls)	5,5%	*	*	33,5%	36,7%	12,3%
3. Biological monitoring (laboratory)	0,2%	*	*			4,2%
4. Infection prevention and control measures	9,4%	*		6,4%	4,6%	19,7%
5. Risk communication and community engagement	0,6%	*	*	6,3%	30,7%	13,4%
6. Case management (including health system strengthening)	5,7%	*	*	51,4%	22,2%	47,1%
7. Evaluation and research	0,2%	*			1,5%	
TOTAL	100%	*			100%	100%
Note : * : data not available						

The budgets for response plans vary widely between countries (Table 6). The response plan budget is around \$15.3 per capita in Burkina Faso compared to \$0.1 per capita in Niger.

Table 6
Health budget of response plans with population size, by country

	Burkina	Côte d'Ivoire	Guinée	Mali	Niger	Sénégal
« Health » budget of response plans (local currency)	177914978612 (FCFA)	25069229 (FCFA)	561300000000 (Francs guinéens)	3372917000 (FCFA)	1454910727 (FCFA)	1440574651 (FCFA)
Budget "health"/inhabitant (local currency)	9007,6	3824,6	90621,2	176,8	64,8	90,9
Budget for health component only/habitant (\$)	15,3	6,5	9,97	0,3	0,1	0,15

However, the availability of budgets is not guaranteed, even though the majority of countries do not mention this fact in their documents. In Burkina Faso, the country announces that it has released a financial package of 500 million CFA francs, or 0.28% of its budget. The country announced that 2.41% of its plan was covered by external contributions that had already been pledged, of which slightly less than 10% (9.6%), i.e. 412,958,116, FCFA had already been released, which raises the question of the effective implementation of these plans.

Crisis Management Committees

The analysis of the various committees formed in the context of the pandemic in the seven countries is a challenge, given the lack of transparency in the national communications on their creation and implementation. In addition, there are several sub-committees and commissions that revolve around the primary bodies, the outlines of which are not always very clear. There seem to be two main groupings: on the one hand, the bodies managing the response to the pandemic and, on the other hand, the consultative bodies. The bodies behind the creation of these different committees are either ministries or, as in the case of the Monitoring Committee for the implementation of the operations of the FORCE Covid-19 created in Senegal, the presidency or head of government. In Senegal, the setting up of a scientific committee had been announced, but it appears never to have been organized; nevertheless, we have seen the establishment of research and ethics commissions. The bodies identified by our analysis (Additional files 3), were mostly created following the first cases of coronavirus. The composition of the bodies identified depends primarily on their mandate; the committees whose mandate is oriented towards surveillance

and research objectives are mostly composed of scientists, while the members of bodies with a mandate for response management are most often from the public sector, including a significant number of ministers. Finally, we have observed the numerical importance of scientists from the basic sciences, a significant under-representation of women, the rare presence of technical and financial partners and the notable absence of actors from the voluntary sector, civil society, patient representatives, and from the private sector. Guinea is an exception here, however, with a scientific committee chaired by a woman, a gynaecologist, and two vice-chairmen, an anthropologist and a virologist. It should also be noted that there are many commissions within the Agence de Sécurité Sanitaire (Health Security Agency) that work on specific themes and welcome NGO actors (communication commission, laboratory commission, etc.).

Discussion

Supported by our team of multidisciplinary collaborators from the COVID-19 data platform, we have undertaken this project to describe and analyse the epidemiological evolution in seven Francophone West African countries during the first four months of the pandemic, and the public measures taken to deal with it. Our epidemiological analysis demonstrated the diverse nature of COVID-19 outbreaks depending on the context of its spread, and has highlighted the delicate issue of case detection.

However, despite the diversity of contexts and epidemiological situations in the countries [2], we have noticed a certain similarity in the reactions to the arrival of the pandemic between these countries. It is true that each country was able to take advantage of the relatively late arrival of the virus in the sub-region, compared to the Asian and European continents, in order to prepare themselves and even anticipate certain health measures. It has been hypothesized that this was also due to the use of evidence, including advice from WHO and the Africa Centre for Disease Control [29]. Conversely, other measures seem to have been taken in haste and without consultation, which have led to misunderstandings, frustration and protests. Studies have been undertaken on the social acceptability of the measures [30] to be carried out, but the mistrust often encountered and the sometimes violent demonstrations (Côte d'Ivoire, Guinea, Mali, Niger, Senegal) show that the decisions behind the measures and their content have not always been understood and integrated into policy. A certain form of inconsistency, as elsewhere in the world, has also been noted regarding the lifting of certain restrictive measures, the reasons for which are probably other than health concerns. This lack of consistency between epidemiological curves and public health measures has thus sometimes led to scepticism about the very existence of COVID-19, as was sometimes the case with Ebola [31]. However, anticipation and preparation are precisely at the heart of epidemic management as the case of Ebola has clearly shown in the region [32] and trust and governance are essential elements of good pandemic preparedness [32].

Also, and despite the respite offered by the gradual advance of the pandemic, we have found that countries have taken a number of relatively similar - if not identical - health measures, which more fundamentally raises the question of the appropriateness of these measures to their national contexts and reawakens the myth of a "turnkey" response applicable to all and at all times. Yet all the scientific literature on public health interventions, including in Africa [33, 34] and on COVID-19 [13] affirms the importance of taking contexts into account in order for measures to be effective [35]. This need to contextualize the health response also requires taking into account the specificities of the disease. Although the state of knowledge on this virus is still limited and constantly evolving, evidence of the effectiveness or the processes to be used to develop or organise specific actions is already available. For example, regarding containment measures, a scoping review synthesising relevant knowledge published in 2018 highlights the importance of community involvement for their effectiveness [36]. A study on Ebola in 2014–2016 in the region similarly showed the need for community involvement in disease control interventions that take into account local dynamics [34]. The analysis of the situation in five African countries at the beginning of the pandemic also showed the importance of community involvement [10]. However, communities are still far from the process of reflection and formulation of health measures to be introduced within the context of COVID-19. This unfortunate observation has also been made for COVID-19 in Europe and elsewhere [21, 37]. However, community engagement will be undoubtedly essential when testing the eventual vaccine, as was the case for Ebola [38].

The observation drawn here is also valid for the management committees which, in the seven countries analysed in this paper, as elsewhere in the world [21], have effectively neglected to involve representatives of users, patients or NGOs. As everywhere, the power of these committees remains inexorably in the hands of clinicians, as the interdisciplinary, intersectoral or health promotion approach has been totally ignored [21]. Similarly, the presence of women has been completely side-lined, here as elsewhere, yet, as Bali et. al. noted in a recent paper "*women are not only a vulnerable population, they can serve as agents of change whose contributions can improve epidemic response and recovery*" [39]. However, this situation of exclusion is deeply rooted in the region and the pandemic has therefore not been able to change this state of path dependency. The paradigm shift in public health approaches that this pandemic has shown to be indispensable is still far off [40].

As in most countries across the world, politics has also been widely invoked in the management of the pandemic in the countries of the region. This has been prevalent in countries where elections were held during the crisis (Benin, Guinea, Mali) but also in countries where political movements have taken advantage of some of the challenges faced by governments and political parties in power, in order to attack them in the face of upcoming elections (Burkina Faso, Côte d'Ivoire, Senegal). In Côte d'Ivoire, funds distributed by Deloitte to help large companies to counterbalance the economic crisis precipitated by the pandemic were offered primarily to companies sympathetic to the ruling party. As a result of such actions, several civil society organizations in many countries have sometimes denounced the state of "*management in total uncertainty*", such as the National Coalition for Health and Social Action in Senegal. The same is true for religious bodies where, in some countries such as Senegal or Mali, they have taken a prominent place in the debates and had a major influence on political decisions concerning certain measures, particularly concerning the closure of places of worship (especially for Muslims in the context of the Ramadan period), but not exclusively. The pandemic has thus sometimes again highlighted the close links between the religious and political spheres in the region.

Although some believe, as in South Africa, that the measures taken have made it possible to delay the peak of the epidemic [14], we believe that, in the context of the seven countries concerned here, such an assessment is impossible to make given the current state of knowledge. Driven by the urgency to act, measures have been applied almost everywhere and without any real means of evaluating their effectiveness. Moreover, most of these interventions were stopped, or their scope was reduced, at the end of June 2020, leaving a very short time window for evaluation, not to mention the fact that few research

organizations will be able to measure the degree of fidelity with which they were implemented, and the real application of these measures in these countries [41]. A study in the Democratic Republic of Congo showed that the official recommendations to wear masks were not respected [42]. The challenges for modelling the effectiveness of these interventions will be enormous. In addition, these interventions were in most cases so complex that it is doubtful whether their effectiveness can be studied systematically [43, 44]. Yet we were warned a few years ago in the region that "*considering a public health measure with such dramatic social effects as containment, the transnational scientific community should engage rapidly in building evidence about the efficacy of containment in the Ebola outbreak*"[45].

Finally, our cross-sectional analysis confirms all the challenges related to data access and the importance of promoting open access to data, especially when, as is often the case in the region, access to documents and epidemiological data is particularly complicated and difficult. The COVID-19 pandemic has only confirmed the importance of this situation [2, 46] where no country in the region has yet put its epidemiological data, apart from those communicated daily to the media, online. something that the West African Health Organization (WAHO) should do. The organization of our collaborative platform has made it possible to create this dynamic of rapid information sharing, as international or sub-regional organizations have not been able to achieve this speed of response. However, our analysis also highlights the challenges of the quality of these data, particularly when, for example, when deaths are not counted in communities in Guinea in a disaggregated manner, when RDTs (Rapid Diagnostic Tests) are used in Benin or when the number of tests is reduced in Senegal or Guinea. The magnitude of the pandemic is thus likely to be underestimated here, as elsewhere [44]. Access to epidemiological data, if available, will make it possible to assess excess mortality in the countries, at different territorial scales, and thus estimate whether the figures disseminated reflect the real situation [42]. In several aspects, COVID-19 thus demonstrates the fundamental need for credible data as a governance tool to identify and support populations, particularly the most vulnerable [47].

Conclusion

This article had no other objective other than to describe and analyse the situation of the COVID-19 pandemic and the state responses organized in seven Francophone West African countries. The comparative analysis identified recurrences in the contexts, public interventions and the reaction of social actors. Simultaneously, our analysis also shows that it is difficult to understand the dynamics of the pandemic in these contexts; COVID-19 is slowly spreading in the region, but it is circulating and is likely to continue to do so for a long time to come. The state of knowledge about this new coronavirus is still in an embryonic stage and research in this region of the world is still scarce. It is therefore becoming urgent and indispensable to mobilize interdisciplinary research teams to better understand the dynamics of the pandemic regarding the interventions implemented in order to ensure their appropriateness and effective adaptation to the contexts.

List Of Abbreviations

NGO: Non-Governmental Organization

RDT: Rapid Diagnostic Tests

WHO: World Health Organization

Declarations

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

Availability of data and materials

All data is available online at <https://www.covid19afrique.com>.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

EB and VR came up with the idea for the development of the platform and the writing of the article. All the authors contributed to this article by providing their country-specific analysis: OB (Benin), LWF (Guinea), AF (Senegal), ES (Benin), FF (Côte d'Ivoire), FB (Niger), AC (Mali), KK (Burkina Faso), FBD (Senegal). EB carried out the analysis of the quantitative data. VR and OB carried out the synthesis of the qualitative data. VR, EB and OB wrote the whole article which was reread, amended, improved and accepted by all the authors of the article.

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Figures

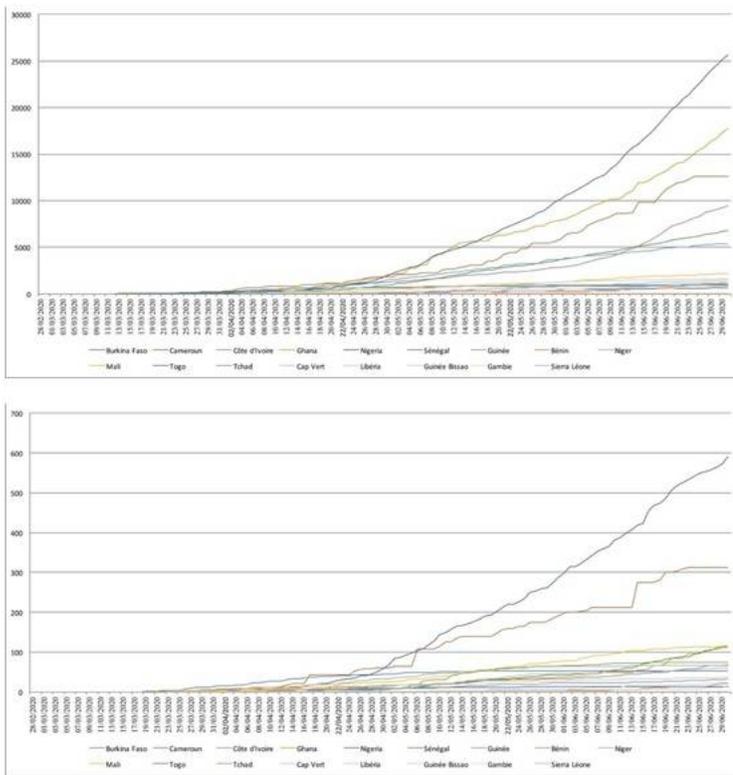


Figure 1

Cumulative COVID-19 cases (a) and deaths (b) by country between 28th February and 30th June 2020



Figure 2

Number of daily cases and moving average (7 days) per country between 28th February 2020 and 30th June 2020

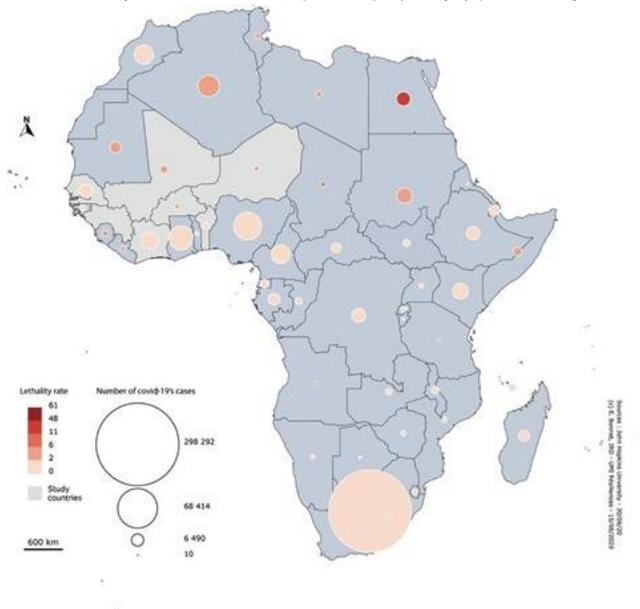


Figure 3

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