



Public Institutions and Management of Covid-19 Challenges: Effects on the Education Sector in Nigeria

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ABSTRACT

This paper intends to interrogate the capacity and effectiveness of public institutions in managing covid-19 pandemic in Nigeria. In the process, various responses of government and relevant institutions were analyzed with the view to assess the effectiveness of the responses. The paper reveals the shortcomings of the responses and the need to be more creative in curtailing the spread of the pandemic. The study was narrowed down to the effect of the pandemic on the education sector in Nigeria, which is one of the sectors strongly affected by the pandemic. This paper is of the view that since the pandemic is still prevailing in Nigeria, with European and Asian countries still battling with the second and possibly anticipated third wave, there is need for the public sector to be more proactive and creative in managing the pandemic. The paper suggested more funding of education and health sector, improvement of sanitation in schools, and innovative approach in sensitization to strengthen the impact of the interventions.

Keywords: Covid-19, Pandemic, Public Institutions, Lockdown, Education Sector.

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1. INTRODUCTION

The outbreak of Covid-19 has impacted greatly on the lives of individuals and institutions globally. More specifically, it impacted on capacity of public institutions and exposes their operational challenges around the world. Efforts to curtail the spread of COVID-19 through non-medical interventions and preventive measures such as social-distancing and self-isolation have prompted the widespread closure of primary, secondary, and tertiary schooling in over 100 countries (Aljazeera, 2020). By November 5th, 2020 almost 1.812 billion students across the world, were affected by sudden lockdown of schools, (Yang et al, 2020). According to UNESCO (2020), 191 countries have implemented nationwide closures, while 5 have implemented local closures, impacting about 98.4 percent of the world students' population.

On 4th March 2020, the British Council released a statement announcing the cancellation of The IELTS examinations, Cambridge O Level, Cambridge International AS & A Level, Cambridge AICE Diploma, and Cambridge Pre-U examinations for the May/June2020 series across all countries. International Baccalaureate exam was cancelled, while the WAEC exam that was recently concluded in West Africa was also postponed. Nigeria as a country ensured that schools and personnel complied with the stay at home order to prevent further spreading among students and school personnel since it is highly contagious. In fact, many unified examinations had to be suspended. Although, most countries have lifted the lockdown, some are still managing the lockdown due to the second wave.



Fig 1: A Typical Classroom Setting During COVID 19

Source: <https://www.unicef.org/wca/press-releases/only-1-3-countries-have-re-opened-school-west-and-central-africa>

Following the gradual ease of lockdown in Nigeria, and the opening of schools on 21st October, 2020, a number of guidelines for the management of Covid-19 were handed out to all public institutions including schools. Most of Africa's 54 countries recorded significant death due to COVID-19, including the death of the former Ghana President J.J. Rawlings. However, a number of countries have opened their borders, international flights and local flight because of declining international trade. According to Wondwosen & Damtew (2020), research on Africa economic forecasts revealed that Africa could experience economy loss of between US\$90 billion and US\$200 billion in 2020, with the GDP shrinking by three to eight points.

The closures as a result of the pandemic did not only affect the educational sector, it also led to the suspension of all public gathering; closure of major markets, religious organizations were restricted from worshipping together and many other gatherings' activities were on hold during the trying period. Currently, schools and other public institutions across Nigeria have been reopened, with strict instructions on the compliance with the covid-19 prevention protocols, although, it would be difficult to measure the specific impact of school closures, because it varied from place to place, persons to



persons (Taibat, 2020).

The guidelines on the management of Covid-19 came with a lot of challenges, for instance, complying with the social distancing protocols is difficult because of limited classroom and office spaces. Although majority of the public institutions and schools are able to provide photosensitive thermometer, hand washing equipment and face masks, the level at which the members of the public comply with the use of face mask is not encouraging. Therefore, the focus of this research is to examine the challenges associated with the management of covid-19 by public institutions, with special focus on Nigerian education sector.

2. CONCEPTUAL EXPLANATION OF COVID-19

The Covid-19 pandemic, also known as the coronavirus pandemic, is an ongoing pandemic of coronavirus disease 2019 (Covid-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which was first identified in December, 2019 in Wuhan, China. The World Health Organization declared the outbreak a Public Health Emergency of International Concern in January 2020 and a pandemic in March, 2020. As at 15 November, 2020 more than 53.9 million cases have been confirmed, with more than 1.31 million deaths attributed to Covid-19 (Chan et al, 2020). Covid-19 mainly spreads through the air when people are closer to each other, primarily via small droplets or aerosols, as an infected person breath, coughs, sneezes, sings, or speaks.

Transmission via fomites (contaminated surfaces) has not been conclusively demonstrated. It can spread as early as two days before infected persons show symptoms (presymptomatic), or from asymptomatic (no symptoms) individuals. People remain infectious for up to ten days in moderate cases, and two weeks in severe cases (WHO, 2020). Common symptoms include fever, cough, fatigue, breathing difficulties, and loss of smell and taste. Complications may include pneumonia and acute respiratory distress syndrome. The incubation period is typically around five days but may range from one to 14 days. There are several ongoing efforts to develop vaccine, although none have completed clinical trials. There is no known specific antiviral medication, so primary treatment is currently symptomatic (WHO, 2020).

3. GLOBAL RESPONSES

The diagnosis of COVID-19 entails combination of epidemiologic information (e.g. a history of travel to or residence in affected region prior to symptom onset), clinical symptoms, CT imaging findings, and laboratory tests (e.g., reverse transcriptase polymerase chain reaction [RT-PCR] tests on respiratory tract specimens) according to standards of either the WHO (2020) or the National Health Commission of China (2020). It should be mentioned that a single negative RT-PCR test result from suspected patients does not exclude infection. Clinically, patients with an epidemiologic history, COVID-19-related symptoms, or positive CT imaging results should be monitored. The results from randomized controlled trials did not show any need to recommend anti-nCoV treatment. Hence, the management of COVID-19 has been largely supportive (WHO, 2020). Another measure was to control the source of infection by using infection prevention and control measures to lower the risk of transmission and providing early diagnosis, isolation, and supportive care for affected patients, while a series of clinical trials were being carried out to investigate interventions that are potentially more effective (e.g., lopinavir, remdesivir; Del Rio and Malani 2020).

However, attempt to treat the virus was initiated on December 31, 2020, when WHO announced that the Comirnaty Covid-19 mRNA vaccine could be administered for emergency use, making the Pfizer/BioNTech vaccine the first to receive emergency validation from the health body since the outbreak of the virus in December 2019 (WHO, 2020d). Nigeria received its first batch of the covid-19 vaccine on March 2, 2021 courtesy the COVAX Facility, a partnership between CEPI, Gavi, UNICEF and WHO (UNICEF, 2021). The arrival of the vaccine aided health workers and government in the battle against the deadly virus.

3.1 Government Responses Through Various Public Institutions

In Nigeria, federal and state governments took proactive steps, some of which are still being enforced, to curtail the spread of coronavirus throughout the country. As the country experienced a steady increase in the number of confirmed cases; movement restrictions, lockdowns and other situational responses were instituted to adequately respond to the pandemic (Thelma & Adedeji, 2020). Covid Protocols: Recommended preventive measures include hand washing, covering one's mouth when sneezing or coughing, social distancing, wearing a face mask in public, ventilation and air-filtering, disinfecting surfaces, and monitoring and self-isolation for people exposed or symptomatic. Nigerian government supports worldwide responses by implementing travel restrictions, lockdowns, workplace hazard controls, and facility closures. Many places have also initiated effort to increase testing capacity and tracing contacts of the infected.



Fig 2: Testing During COVID 19

Source: <https://www.afro.who.int/news/african-countries-start-easing-covid-19-confinement-measures>



3.2 Lockdown

On 29 March 2020, the Nigerian President, Muhammadu Buhari, addressed the nation on the Federal Government's efforts to curtail the spread of COVID-19 within the country. In his address, he directed a cessation of all movements in Lagos State, Ogun State and the Federal Capital Territory for an initial period of fourteen (14) days. Although, the cessation of movement in Ogun State was postponed until Friday, 3 April 2020, lockdown in Lagos and Abuja was ordered to commence on Monday, 30 March 2020. This lockdown was to enable the government to track the spread of COVID-19 within these areas. Citizens in these states were directed to stay at home during the lockdown. Inter-state travels were restricted and all businesses and offices within these states were fully closed during the period. The president also constituted the Presidential Task Force on covid-19 headed by the secretary to the federal government, Boss Mustapha.

Certain businesses were exempted from the lockdown restrictions particularly those providing health related and essential services, including hospitals and related medical establishments, organizations in healthcare related manufacturing and distribution, as well as commercial establishments involved in food processing and distribution, petroleum distribution and retail entities, power generation, transmission and distribution companies and private security companies. Workers in telecommunication companies, broadcasters, print and electronic media that were unable to work from home were also exempted. Seaports in Lagos state were exempted as well as vehicles and drivers conveying essential cargoes from the seaports to other parts of the country, which were screened before departure by the Ports Health Authority. Critical staff members of the CBN, deposit money banks, the Nigeria Interbank Settlement System (NIBSS), mobile money operators and payment solution providers were also exempted from the lockdown.

On Monday, 30th March 2020, the President signed the Federal Government's COVID-19 Regulations of 2020 which declared COVID-19 a dangerous infectious disease and granted a legal basis to the directives stated in the President's address. The Federal Government also directed the security agencies to implement the restriction of movement order. **Relieve on Loan Repayment:** The Regulations further instituted a moratorium on loan transactions through Bank of Industry, Bank of Agriculture and the Nigeria Export Import Bank. Financial and money markets were exempted from the lockdown to run skeletal services to allow Nigerians access online banking services.

The Economic Stimulus Bill 2020: The House of Representatives passed the Emergency Economic Stimulus Bill 2020 on March 24 to provide support to businesses and individuals in Nigeria. The proposed law aimed to provide 50 percent tax rebates to businesses that are registered under the Companies and Allied Matters Act to assist them in retaining their employees. However, while the bill focused on providing relief to formal sector businesses, 65 percent of Nigeria's total GDP comes from the informal sector, which also employs more than 90 percent of the workforce, and these workers need support to survive. Many businesses in the informal sector are unregistered, so it was difficult for them to get these benefits. For the government to help these businesses, it is essential to give out small interest-free loans or small grants to these enterprises through microfinance facilities and other community-based channels.



Cash Transfers: On April 1, 2020, the government announced cash transfers of 20,000 Naira (\$52) to poor and vulnerable households registered in the National Social Register (NSR). Currently, the NSR has only 2.6 million households (about 11 million people) registered on its platform, but government hope to increase this to 3.6 million households during the COVID-19 crisis. However, 87 million Nigerians live on less than \$1.90 a day. Therefore, the cash payments by the federal government only managed to reach a fraction of the poor. Besides, Nigeria does not have a robust national information management system, making electronic payments difficult; however, government can provide prepaid debit cards to the poor as an alternative. This can be done at the community or ward level to reach the target, before embracing more effective measures like direct bank transfers.

Central Bank of Nigeria Stimulus Package: The CBN's stimulus package offered a credit of 3 million Naira to poor families affected by COVID-19. However, the loan required collateral and was not interest-free. This hinders accessibility by poor households. The loans should be available at a low interest rate, with long moratorium for repayment period. Moreover, awareness should be created as many poor households and businesses in the informal sector are ignorant of available economic packages and policies implemented by the government. **Food Assistance:** As a result of lockdown in Lagos, FCT, and Ogun states, on April 1, 2020, the Federal Ministry of Humanitarian Affairs Disaster Management and Social Development introduced provision of food rations to vulnerable households in these states to cushion the effects, though the distribution system was marred by irregularities and public criticism. The government has to improve transparency and accountability in the food ration distribution system, by avoiding middlemen, adopting house tagging for identification, involving Local Councils Ward Development Committees, and introducing technology to plug leakages, track rations, and reduce corruption.

4. EFFECTS OF COVID-19 ON EDUCATION SECTOR

Schools: schooling is the most recognized available public policy tool to develop skills and potentials. Therefore, Covid 19 interruption negatively affected learning and skills acquisition, with consequences on school time tables and schedules, while facilities in schools damaged due to unused for long period of time. According to UNESCO, about 35.9 million primary and secondary school were at home. About 25.6 million students were in primary, of which about 87percent (23.5 million) are students enrolled in public schools, and about 10.3 million were secondary school students of which about 81 percent (8.4 million) of them are public school students. There is the possibility that some may not return after resumption due to the impacts. There is need for government intervening measures for this category of students.

Educational Finance

The sudden interruption of the educational system in Nigeria as a result of the pandemic impacts negatively on education finances. Hence, government, parents, ministries of education at various levels and other stakeholders have to change their plans and strategies to finance the education of their children and the education system as a whole. Reasons for this include; extension of school calendar, extra payments in schools, unbudgeted procurement of laptops, android phones, television cables and other means of ICT for new normal innovative online classes at various levels



designed for students.

Most of the smaller private schools found it difficult to pay monthly wages of their staff, while government keeps paying employees without work and services. The implication is that it would impact on commitment of governments towards the education system due to other competing demands from the healthcare, security and other sectors serving the vulnerable. Terminal Classes: The pandemic would affect careers of graduating and recent graduates of universities and other tertiary institutions. Graduating students would experience delay, interruptions in their assessments for the final part of their studies, while the recent graduates would experience economic meltdown. This would create unemployment, job loss, low pay job and unpaid or delayed payment. Finding has shown that graduates from programmes with high predicted earnings can compensate for their poor starting point through both 'within- and across-firm earnings gains', but graduates from other programmes have been found to experience permanent earnings losses from graduating in a recession (Oreopoulos et al. 2020).

Students' Welfare: School feeding programme introduced as a welfare package by the federal government would also be affected greatly with consequences on both parents and students (Thelma & Adedeji; 2020). In 2019, World Food Programme estimates daily access to Nigeria's Homegrown Schools Feeding Initiative to over 9million children in over 40,000 public schools. The objective includes motivating enrollment in schools and learning, improving health through anti-worm treatments and immunizations for learners in public schools across 17 states, and providing social protection for indigents. All these would be denied by the pandemic.

5. MANAGEMENT OF THE EFFECTS ON NIGERIA'S EDUCATION SECTOR

The Nigerian Center for Disease Control NCDC provided a number of guidelines on the management of Covid-19 in the Nigeria education sector. It includes measure on physical distancing and hygienic practices.

5.1 Management Strategies

Safe Distancing

In schools and other learning facilities, learners are expected to stay two meters apart. However, there are exceptions where the two-meter rule cannot be reasonably applied; other risk mitigation strategies may be adopted. Example includes early years, younger primary school children, and those with additional needs. In these circumstances, risk assessments must be undertaken as it affects the learners, teachers, and other education stakeholders. It is imperative that the safety and hygiene measures as contained in the document is strictly observed by the adults staff involved in managing the measures.

Online Learning

Most schools are advised to switch to online learning. This would facilitate learning from home and at the same time reducing students' physical interaction.



Fig 3: Remote Teaching During CODID 19 Pandemic

Source: <https://www.globalcitizen.org/en/content/nigeria-teacher-maths-virtual-learning-covid-19/>

Outdoor Learning

This can limit transmission and also allows for safe distancing between the learners and teachers. The use of outdoors shelter is necessary for the protection and safety of learners and teachers. In addition, safety and security measures must be provided in each location.

Staggered Attendance

The time schedule for arriving and departing by different categories of students can vary to avoid overcrowding and schools may reopen gradually (e.g., starting with particular grade levels).

Alternate Attendance

Schools may alternate attendance days per week, with learners at the secondary level (or equivalent) and above having fewer in-person classes, since these learners can manage independent learning better (e.g., junior secondary school learners on Tuesdays and Thursdays, while primary school learners attend classes on Mondays, Wednesdays, and Fridays).

Platooning

Classes may be divided into morning and afternoon shifts.

Decreased Interaction

Learners may remain in one location with teachers coming to them.

Flexible Schedule

Lessons may be structured in a way that reduces the need for learners and staff to move between different areas of the premise.



Hygienic Practices

Each school is expected to provide materials for hands washing and hands sanitizer at a central place for students. In addition, each student must wear face or nose mask.

Sensitization

This includes posters, boldly written instruction in central places and instructions to students concerning the protocols.

5.2 Constrains Against the Measures

Electricity

Access to affordable electricity is a basic requirement for the development of any learning that is not classroom based. Many parts of Nigeria, particularly rural areas, do not have access to sustainable and affordable electricity. It is certainly a prerequisite for universal access to distance learning. Without access to electricity, there could be no access to television, radio or any other form of ICT capable of sustaining a technology-based distance learning programme.

Technology Infrastructure

eLearning, by definition, requires not only electricity, but also access to both data connectivity and to devices through which the eLearning materials can be accessed. All these are either not available or inadequate in many parts of Nigeria.

Competent Personnel

a number of school officials and teachers do not have the required competence to operate the devices meant for online learning. Adequate ICT knowledge is required to operate computers, its applications and the accessories that will make remote learning possible.

Non-conducive Home Learning Environment

A number of home in both urban and rural areas are not conducive for learning, either for the purpose of reading or online learning. This may be due to noise or other forms of distraction that will make learning almost impossible.

Poor Hygiene

Up till now a number of schools do not have access to basic infrastructure such as pipe borne water or running water that is needed for hand washing as a way of preventing Covid-19. Many public schools are not adequately financed by government to provide resources as simple as soap for hand washing. Obviously, inadequate provision of sanitation and hygiene facilities in public institutions and schools has been a challenge in the management of covid-19 in the Nigerian education system.

Uncooperative Attitude

A number of Nigeria citizens did not comply with the guidelines for the prevention of covid-19. Majority of persons no longer use the face mask or abide by safe distancing protocol. A lot of persons either believe that the government is lying about the number of cases, or that covid-19 does not exist, and in some cases due to cultural implications.



Overcrowding

Overcrowding in most public schools hinder measures provided for physical distancing. This was caused by inadequate structures and facilities that can cope with over enrollments.

Lack of Political Will: Government has been very partisan in the distribution of the palliatives to cushion the effect of covid-19 on the members of the public and institutions. A lot of states hoarded the palliatives while some only focused on their political party members alone.

5.3 Essentials to Enhance Management of Education Sector During Pandemic

Adequate Funding of Health and Education Sectors

Adequate funding of hospital is necessary to enhance its management. Provision of basic equipment and adequate remuneration of staffs will promote better health outcomes during the management of this pandemic. Similarly, it is important to provide basic equipment, technology and the required training for schools and its personnel to ensure healthy and safe environment for learning.

Creative Delivery

Different learning approach must be designed for various lessons and learning environments, most especially in-person learning (indoor, outdoor) and media for distance learning (printed materials, online, TV, and radio). There may be differential time allocation for learning in each of these environments.

Sensitization

Sustained campaigns, advocacy and sensitization, especially in rural and remote areas, and adopting child friendly messaging (using animations, infographics and cartoons in local languages) on the pandemic, public health and adopted safety measures, to facilitate necessary behavioral changes to new normal.

Safety and Hygiene

Schools are supposed to engage in the disinfection and fumigation of facilities, including hostel accommodation, temporary isolation and treatment centers. They should also establish a School COVID-19 Referral System, including protocols and procedures to cater for learners, teachers, administrators, and other education personnel that may require medical attention. Compliance to NCDC guideline is essential. Schools are to develop detailed protocols and provide facilities to establish and maintain prescribed hygiene standards and sanitary facilities.

Social Protection

Schools are to develop appropriate mental health and psychosocial support services to address stigmatization and discrimination. They should assist learners, teachers, administrators, and other education personnel and their families in coping with the psycho-social effects of COVID-19.



6. CONCLUSION

The outbreak of corona virus has interrupted the educational sector and it is a set-back to the development of Nigeria education system unless it is properly managed by the government and stakeholders. A number of studies have shown that transmission of an outbreak may be curtailed by reducing social gathering and contacts. However, effectiveness of this decision largely depends on compliance to the protocols by students outside their schools. Although the closure of schools helped a lot when it was introduced at an early stage, but the continued lockdown of schools has been considered a major setback for the education system. This is why the schools were reopened, because educational sector remains the driver of development of any country. Therefore, where the gains are not properly managed, the reopening of schools after closure may worsen infection rates (Lu et al, 2020).

REFERENCES

1. Aljazeera. (2020). Coronavirus: Which Countries have Confirmed Cases? Retrieved from aljazeera.com on May 20, 2020.
2. Bjorklund,A.; Salvanes, K. (2011). Education and Family Background: Mechanisms and Policies, in E Hanushek, S Machin and L Woessmann (eds), Handbook of the Economics of Education, 3.
3. Carlsson,M.; Dahl,G.B.; Öckert, B.; Rooth, D. (2015). The Effects of Schooling on Cognitive Skills. Review of Economics and Statistics, 2015, 97(3), 533-547.
4. Chan, J.F.; Yuan, S.; Kok, K.H.; To, K.K.; Chu, H.; Yang, J.; Xing, F.; Liu, J.;Yip, C.C.; Poon, R.W. et al. (2020). A Familial Cluster of Pneumonia Associated with the 2019 Novel Coronavirus indicating Person-to-Person Transmission: A Study of a Family Cluster. Lancet, 2020, 395(10223), 514-523.
5. Chen, N.; Zhou, M.; Dong, X.; Qu, J.; Gong, F.; Han, Y.; Qiu, Y.; Wang, J.; LiuY.; Wei, Y. et al. (2020). Epidemiological and Clinical Characteristics of 99 Cases of 2019 Novel Coronavirus Pneumonia in Wuhan, China: A Descriptive study. Lancet, 2020, 395(10223), 507-513.
6. Lavy,V. (2015). Do Differences in Schools' Instruction Time Explain International Achievement Gaps? Evidence from Developed and Developing Countries. The Economic Journal, 125(588), F397-F424.
7. Lu, R.; Zhao, X.; Li, J.; Niu, P.; Yang, B.; Wu, H.; Wang, W.; Song, H.; Huang,B.; Zhu, N. et al. (2020). Genomic Characterization and Epidemiology of 2019 Novel Coronavirus: Implications for Virus Origins and Receptor Binding. Lancet, 395(10224), 565-574.
8. National Health Commission of China. 2020a. The Diagnosis and Treatment Protocol for Novel Coronavirus Pneumonia (interim sixth edition). Available online: <http://www.gov.cn/zhengce/zhengceku/2020-2/19/content5480948.htm>
9. National Health Commission of China, 2020b. An Update of Novel Coronavirus Pneumonia Outbreak as of 24:00 on February 25. Available online:http://www.nhc.gov.cn/xcs/yqtb/list_gzbd.shtml
10. Oreopoulos, W.J.; Ni, Z.Y.; Hu, Y.; Liang, W.H.; Ou, C.Q.; He, J.X.; Liu, L.; Shan, H.;Lei, C.L.; Hui, D.S. et al. (2020). Clinical Characteristics of 2019 Novel Coronavirus Infection in China. MedRxiv, DOI:10.1101/2020.1102.1106.20020974.



11. Taibat, H. (2020). Education and Covid-19 in Nigeria: Tackling the Digital Divide. Available online: <https://www.soas.ac.uk/blogs/study/covid-19-nigeria-digitaldivide/>.
12. Thelma, O.; Adedeji, A.(2020). Covid-19: Impending Situation Threatens to Deepen Nigeria's Education Crisis. An article published at the Centre for the studies of the Economies of Africa.
13. UNICEF Nigeria (2020). Nigeria Education in Emergencies. Working Group; Nigeria Education Sector COVID-19 Response Strategy in North East. Available online: <https://covid19.ncdc.gov.ng>.
14. UNICEF Nigeria (2021). Covid-19 Vaccines Shipped by COVAX Arrive in Nigeria. Available online: <https://www.unicef.org/nigeria/press-releases/covid-19-vaccines-shipped-covax-arrive-nigeria>
15. World Health Organization, 2020a. Clinical Management of Severe Acute Respiratory Infection when Novel Coronavirus (2019-nCoV) Infection is suspected: interim guidance. Available online: [https://www.who.int/publicationsdetail/clinical-management-of-severe-acute-respiratory-infection-when-novelcoronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publicationsdetail/clinical-management-of-severe-acute-respiratory-infection-when-novelcoronavirus-(ncov)-infection-is-suspected).
16. World Health Organization. 2020b. Coronavirus Disease 2019 (COVID-19): situation report-36. Available online: https://www.who.int/docs/defaultsource/coronaviruse/situationreports/20200225sitrep36-covid19.pdf?sfvrsn=2791b4e0_2.
17. World Health Organization. 2020c. Questions and Answers on Corona viruses. Available online: <https://www.who.int/newsroom/q-a-detail/q-acoronaviruses>.
18. World Health Organization. 2020d. WHO Issues its First Emergency, Use Validation for a Covid-19 Vaccine and Emphasizes Need for Equitable Global Access. Available online: <https://www.who.int/news/item/31-12-2020-who-issues-its-first-emergency-use-validation-for-a-covid-19-vaccine-and-emphasizes-need-for-equitable-global-access>.
19. Yang, Y.; Lu, Q; Liu, M.; Wang, Y.; Zhang, A.; Jalali, N.; Dean, N.; Longini, I.;Halleran, M.E.; Xu, B. et al. (2020). Epidemiological and Clinical Features of the 2019 Novel Coronavirus Outbreak in China. MedRxiv, DOI:10.1101/2020.1102.1110.20021675.