Nigeria in the COVID Era: Health System Strengthening for National Security and Prosperity

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Abstract

The coronavirus disease-19 pandemic has spread to all parts of the world. As of 20 May 2022, over 500 million confirmed cases have occurred with over 6 million deaths. In Nigeria, over 255,000 cases have occurred with more than 3000 deaths. The pandemic has adversely affected virtually all aspects of human endeavour, with a severe impact on the health system. The Nigerian health system was ill prepared for the pandemic, and this further weakened it. The impacts of the pandemic on the health system include disruption of health services, low motivation of the health workforce, unresponsive leadership and poor funding. The national response, though initially weak, was ramped up to expand capacity building, testing, public enlightenment, creation of isolation and treatment centres and research. The funding for the national response was from the government, private sector and multilateral donors. Nigeria must comprehensively strengthen its health system through motivating and building the capacity of its human resources for health, improved service delivery and provision of adequate funding, to be better prepared against future pandemics.

Keywords: Coronavirus disease-19, funding, health system strengthening, impact, pandemic, service delivery

Introduction

A health system is the total of all the organisations, institutions and resources working primarily to improve health.[1] Requirements for functional health systems include staff, funds, information, supplies and communications. It needs to provide services that are responsive and financially fair while treating people decently.[1] Some of the outcomes of health systems include improvement in the health status of community members, protection against threats to health and protection against catastrophic health expenditure. The World Health Organization (WHO) has produced a building framework for understanding and strengthening health systems. The framework has six blocks namely human resources for health; service delivery; medicines, vaccines and technologies; health financing; health information system; leadership and governance.[1]

The United Nations Commission on Human Security defines human security as protecting the vital core of all human lives in ways that enhance freedoms and human fulfilment.[2] The threats to Nigeria’s security include banditry, kidnapping, violence, criminality and recently coronavirus disease (COVID)-19. Health security refers to freedom from danger or threats to health and focuses on the well-being of people. Health security has two perspectives. The first one is a narrow perspective that views health security as protection from diseases. The second perspective is broader and refers to the provision of health services in a way that will promote, protect the health of citizens and provide curative and rehabilitative care when they fall ill. This is to be viewed from the perspective that health is a fundamental right of Nigerians as enshrined in the 1999 Constitution.[3]

Prosperity is defined by the Merriam-Webster Dictionary as the condition of being successful and thriving, especially economic well-being.[4] When applied within the Nigerian context, the nation at the current time cannot be considered a prosperous one.
nation, especially when the Nigerian National Bureau of Statistics reported in 2019 that 40.1% of Nigerians live in poverty with a wide urban (18%) and rural (52%) disparity.\[v\]

The impact of COVID-19 is huge on the socio-economic lives of Nigerians with lockdowns and job losses pre-COVID and now during the COVID era. The disease has threatened the health system, the national security and the prosperity of Nigeria, and therefore, its impact must be reduced. The objectives of this paper are to: discuss the epidemiology and impact of COVID-19 on the Nigerian health system and make recommendations on how to strengthen the health system against COVID-19, future pandemics and other public health emergencies of international concern so that Nigerians can be more secure and prosperous.

**Epidemiology of Coronavirus Disease-19**

COVID-19 is caused by the severe acute respiratory syndrome virus coronavirus disease-2 (SARS-CoV-2). SARS-CoV-2 is a single-stranded RNA enveloped B-coronavirus with a genetic sequence very similar to SARS-CoV (86%) and bat coronavirus RaTG13 (96.2%). The viral envelope is coated by the spike (s) glycoprotein, envelope (E) and membrane (M) proteins.\[v]

The S protein allows the virus to enter and bind to host cells. The s1 sub-unit of the S protein contains the receptor-binding domain that binds to the peptidase division of the angiotensin-converting enzyme 2 (ACE-2). There are several variants of the virus: Beta, Delta, Gamma and Omicron, but the epidemiological impact of these variants on vaccine effectiveness is still being understood. SARS-CoV-2 has a high rate of infectivity and efficiency, and its reproduction number is 2.5 at the start of an outbreak although it drops as herd immunity develops. The S protein is structurally different and binds stronger to the ACE-2 with a greater affinity for the upper respiratory tract and conjunctiva.

The infection started in Wuhan, Hubei Province, China, in December 2019 and has spread to all parts of the world. As of 20 May 2022, 250,912,257 confirmed cases have been reported to the WHO with 6,272,408 deaths, with a case fatality rate of 1.20%. The United States of America, India and Brazil have the highest number of cases.\[v]

In Nigeria, the number of confirmed cases as of 20 May 2022 is 255,924 with 3,143 deaths, with a case fatality rate of 1.23%, and Lagos State remains the epicentre of the infection.\[v]

Transmission is via infected respiratory droplets and by contact with infected materials. The risk of infection depends on the host characteristics, and the exposure risk is greatest in households and closed gatherings. The incubation period is 5–6 days.\[v]

The spectrum of the infection ranges from asymptomatic, pre-symptomatic, mild-to-moderate illness, to severe illness and death. The non-specific symptoms include fever, myalgia, headache, cough, sore throat, anosmia and ageusia.\[v]

Other more specific symptoms may include difficulty in breathing, respiratory failure, liver and kidney failure and coagulopathy. In most people, the infection is mild and self-limiting, especially in healthy young adults.\[v,v]

The risk factors for COVID-9 include the elderly, male gender, diabetes mellitus, cardiovascular disease and malignancy. In individuals with severe disease, there is an aberrant immune response thought to be due to a cytokine storm. Risk factors associated with the development of severe disease include age >75 years, male gender, severe obesity and active cancers.\[v]

The diagnosis is by quantitative-reverse transcriptase-polymerase chain reaction (PCR) test. Before vaccines became available, there was no specific therapy for the disease. Treatment was largely supportive with dexamethasone, oxygen and broad-spectrum antibiotics to prevent secondary bacterial infections. Various non-pharmacological interventions were found to be effective on a population level to reduce the spread of the infection. These included lockdowns, school closures, limitation of large gatherings, isolation and use of hand sanitizers and face masks.\[v]

Vaccines from various manufacturers have proven effective in large trials and are now used globally.\[v]

Over 11 billion doses of vaccines have been given worldwide.\[v]

**Impact of Coronavirus Disease on the Nigerian Health System**

Nigeria was unprepared for the COVID-19 pandemic. The first case was recorded on 27 February 2020. Nationwide, there was a lot of confusion about what to do. Most states were not prepared. There was limited capacity, testing was largely non-existent and treatment and isolation centres were few. The lockdown was delayed for political reasons, and when it was implemented, it was limited to Lagos State, Ogun State and the Federal Capital Territory, which enhanced country-wide community transmission. The Head of the Presidential Task Force (PTF) and Secretary to the Government of the Federation were quoted or misquoted saying that he/she was not aware of the poor state of the health system.\[v]

The impact of the pandemic on the health system is discussed further using the building blocks framework.

**Human Resources for Health**

Up to 50% of health facilities across Africa reported COVID-19 infection amongst their staff.\[v]

The infection impacted both the physical and mental health of health-care workers. A focus group discussion amongst health workers showed that the pandemic led to mental health problems, stigmatisation and emotional trauma.\[v]

Some of the challenges health-care workers faced during the pandemic were non-provision of personal protective equipment (PPEs), personal and welfare issues, underfunding, reduced supply of medications and poor information system.\[v]

A study amongst health workers at treatment centres reported that 42% felt that the exposure to COVID-19 was mainly from aerosol-generating procedures.
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and 87% judged themselves to have a high-risk exposure. Two-thirds of the group felt that the provision of PPEs was adequate, face masks were worn by 72% and 63% performed hand hygiene before conducting any procedure. No health worker characteristics were associated with the risk of contracting the infection.\textsuperscript{[19]}

Due to poor working conditions and inadequate protection initially, at the onset of the pandemic in Nigeria, the infection amongst health workers was high and a number succumbed although there are no clear incidence rates and the evidence that most of the infections were from workplace exposure is unproven. A qualitative study amongst community health workers reported that although they were able to function as care providers during the pandemic, they were encumbered by increased workload and lack of transportation. The willingness to work was informed by the support given to perceived risks from the infection. They suggested financial incentives and additional staff as measures to mitigate the impact of the pandemic amongst health workers.\textsuperscript{[20]} Another group of researchers highlighted the need to include community health workers for an effective and coordinated response to the pandemic.\textsuperscript{[21]} The political will to improve working conditions for health workers was lacking even when health workers demanded an increase in hazard allowance. During the pandemic, there was an industrial action by resident doctors which lasted for over 60 days. Simultaneously, large numbers of doctors and nurses migrated out of the country for greener pastures.

**Health Service Delivery**

At the onset of the pandemic, citizens were scared of accessing health facilities for fear of contracting the disease which led to the use of alternative health providers. Services were disrupted for several reasons: fear, lack of PPEs, the need to protect health workers and prevent nosocomial spread and limited movements due to lockdowns. A telephone survey in Burkina Faso, Ethiopia and Nigeria amongst health workers and community members revealed that there was partial-to-complete interruption of services and service disruption for both maternal and child health services, while community members had difficulties in accessing health services.\textsuperscript{[22]}

A study amongst 388 health workers in Nigeria reported that patient attendance was low, and the uptake of health services was reduced during the pandemic. Factors implicated were fear of nosocomial infections, fear of stigmatisation and misconceptions/ misinformation on the infection.\textsuperscript{[23]} In Nigeria, a cross-sectional survey of 307 primary health care (PHC) centres in 30 locations in 10 states across the geo-political zones of the country reported a decline of 2%-6% in service delivery during periods of the lockdown and up to 10% decline after the lockdown with reductions in client utilisation. The difficulties were due to stock out of drugs, transportation and harassment by law enforcement agents.\textsuperscript{[24]}

Services for non-communicable diseases were not spared during the pandemic as there were declines in the treatment of diabetes, cancer treatment and hypertension.\textsuperscript{[25]} It also caused massive disruption to human immunodeficiency virus (HIV), tuberculosis (TB) and malaria services in both Asia and Africa. HIV testing fell by 41%, TB referrals declined by 59% and malaria diagnosis fell by 31%.\textsuperscript{[16]} However, during the pandemic, there was an expansion of health infrastructure with a rapid increase in the number of molecular laboratories that could conduct COVID-19 PCR tests, and increase in funding and intervention by the private sector.\textsuperscript{[26]}

**Medicines, Vaccines and Technologies**

The pandemic brought about disruptions in the global supply chain such that essential medicines most of which were imported to Nigeria were not readily available. Moreover, the disruptions made it difficult to import raw materials for manufacturing medicines in Nigeria. These led to higher costs of medicines as demand far outstripped supply, and many essential medicines became out of stock. The increased costs were seen in the prices of some antibiotics, many supplements (as they were believed to ‘boost’ the immune system), face masks, hand sanitizers and ineffective medicines such as hydroxychloroquine and ivermectin.\textsuperscript{[27]} The unstable exchange rate and devaluation of the Naira contributed greatly to the high costs.

A pan-Nigerian cross-sectional survey showed that 35% of respondents who had chronic illnesses experienced difficulties in accessing their medicines and 77% reported increases in the costs of their medicines.\textsuperscript{[28]} During the pandemic, the prevalence of self-medication was 41%. The contributing factors were fear of stigmatisation, fear of being quarantined, fear of infection or contact with a suspected case of infection. The reasons for self-medication were proximity to pharmacies, distance to a health facility, delay in receiving hospital services and emergency illness.\textsuperscript{[29]}

**Health Information System**

There was a lot of misinformation, and everyone had an idea of what COVID-19 looked like. The attempt to focus on the medical aspect and the epidemiology did not help much as the more urgent matters were socio-economic. It appeared that many of the messages did not have the desired impact. Most of the initial information was too technical and unsuitable for the citizens. The initial concept of the infection perceived by the public was that it was a disease of the rich. When the messaging improved, it was more on social media which assumed falsely that every Nigerian had a smartphone. The use of traditional methods of communication was limited. Information gathering and dissemination were not very efficient and were available largely to the health professionals. There was no consistency in the messages although this was improved, especially in Lagos State and by the PTF.
HEALTH FINANCING

The financing of the health system in Nigeria has been very poor, most of it being out of pocket. In the COVID era, with lockdown and job losses, it became more precarious. With the disease, new challenges occurred even for the most prepared facilities due to the high costs of consumables and patient care. Governments ordered the management of hospitals to attend to patients, but the financial backing was not provided on a timely basis.

Nigeria raised far more (USD 560.92 million) than its budgeted expenditure (USD 330 million) for the pandemic, with a large percentage from the private sector. However, large amounts were spent on temporary public health measures and clinical care with little investment to strengthen the health system. In Kaduna State, the budget for the State PHC Board was reduced by 11.5% with implications for the smooth running of PHC services. A lot of interventions were made to address financing the problems created by the pandemic, but will they be sustainable?

LEADERSHIP AND GOVERNANCE

COVID-19 exposed the failures of leadership at all levels of the health system. Even the highest level of leadership did not know how much health workers earned as hazard allowances and felt that the latter were only doing their jobs. The incident command system worked well in a few states. In many others, there were confusion and antagonism about the needed response. Many of the leaders were missing in action. Some authors have blamed leadership failure since the independence for the state of unpreparedness of the Nigerian health system which was glaringly exposed by the pandemic. This failure is most pronounced in the neglect of PHC, the welfare of health workers and underfunding. The main leadership element during the pandemic seemed to have been funds mobilisation. The health system remained in a weak state, public health laws enacted were not effectively implemented and minimal attention was paid to research.

THE NIGERIAN RESPONSE TO COVID-19

There were several levels of response in Nigeria to the pandemic at both national and sub-national levels. At the Federal level, the PTF was established on 9 March 2020, which has now been changed to a steering committee. The PTF coordinated and developed policies for the government and gave direction and briefings initially weekly. The Nigeria Centres for Disease Control was the central technical anchor for the federal response and assisted the states. The efforts culminated in expanded capacity for data collection, training, testing, establishment of guidelines for patient care, surveillance, contact tracing and risk communication. The president signed a law to implement lockdowns and other regulations to contain the pandemic.

The federal level used a model of coproduction to address the pandemic. At the sub-national level, Lagos State probably was the best example. The governor led by example. The state expanded its testing capacity, expanded isolation and treatment centres, approved private laboratories to conduct COVID-19 tests, built capacity and paid hazard allowances to health workers. It also established a strong research pillar that generated many research papers that provided evidence for decision-making. Funding was probably the most successful part of the response. There were multiple interventions by the Central Bank of Nigeria and the private sector-led coalition against COVID-19 (CACOVID).

MISSED OPPORTUNITIES

There were a few missed opportunities during the COVID-19 pandemic. Immunisation rates fell as many mothers out of fear, but an unjustified abundance of caution did not take their children and wards for immunisation, leading to a reduction in vaccination coverage with a potential for outbreaks of vaccine-preventable diseases. This was part of the overall decline in service delivery. There was reduced care for chronic conditions and elective surgeries not only in Nigeria but also globally. Many more preventable deaths occurred which could have been averted if there was no delay or avoidance of health facilities. Opportunities for technology transfer and developmental infrastructure in the health sector were not seized. Sustenance of health-promoting behaviours although emphasised was not truly adopted by the public probably on account of a lack of essential amenities, such as water and power supply. Stigma was scarcely addressed, and the level of health literacy in rural areas was left untouched. Opportunities to strengthen the health system were not in focus, rather than critical care and clinical care were given top priority. Other critical sectors such as education and agriculture were neglected during the pandemic. There were outbreaks of African swine fever in many parts of Nigeria which were largely ignored with some impact on food security. The fragmented approach to health care remained, and many states and local governments felt that COVID-19 was a federal government problem that could be limited to Abuja and a few ‘rich’ states.

RECOMMENDATIONS TO IMPROVE THE HEALTH SYSTEM

Health system actions to improve the health system are based on the building block framework. A lot has to be done to motivate the health workforce. Very often, negative remarks are made against the health workforce to portray them as being uncaring even though this is not true. The continuous training of health-care workers and the creation of an enabling work environment must receive greater attention. Health workers will not refuse postings to remote areas if the essential services including good schools for their children are available. Health insurance must be available for health-care workers, and they must receive living wages. The government must ensure memoranda of actions signed with health workers are implemented. The health workforce is the most important
investment in the health sector and must be regarded as national treasure.

Health services must be made universally accessible to Nigerians. National health insurance cannot continue to be optional. The services must be available, comprehensive, continuous, with increasing scope, and adequately equipped. PHC should be made the cornerstone of the health system’s response to COVID-19. The manufacturing of critical care equipment should be jump-started in the country. There is the need to define more carefully public–private partnerships and the sustainability of such initiatives.

Quantum investment is needed in the building block of medicines, vaccines and technologies along with the creation of an investor-friendly climate. Centres of excellence for genomics, bioinformatics, Biosafety level 4 laboratories, research, vaccine development and clinical trial centres need to be established. Countries that had invested in science infrastructure and development were better prepared to contain the pandemic. They had existing vaccine development platforms and other vehicles which repurposed to deal with the pandemic. Concerning health information, the confusing messages in the pandemic should not continue nor should policymakers assume that everyone is on social media. Most of the vulnerable persons depend more on the traditional media including information from their religious leaders. Information generation must be user-friendly. In many countries, there was the dissemination of easy-to-read, easy-to-understand information. The information should also be used for planning and policymaking.

More can be done to raise funds for the health system to improve health financing. Several models exist, but there is a lack of political will. The success of the interventions by CBN and CACOVID is to be seen. Judicious use of the funds is key. The government must live up to 15% of the budget to be spent on health as contained in the Abuja Declaration.[9] Accountability and active support beyond approving the appropriation of funds by the legislative arm of government are important as seen in the United Kingdom (UK) where the House of Commons published a report on the government response to the pandemic, highlighting an initially wrong response, and the changes made that enabled the UK to effectively tackle the pandemic.[40]

Leadership requires a holistic change particularly from senior health professionals whether they hold administrative positions or not. They must lead from the front and become accountable. At every health facility, timely reports, accountability and provision of information should be available in compliance with the Freedom of Information Act.[41] There should be the opportunity to remove non-performing leaders.

Outside the health sector, there is the need to advocate for better living conditions for Nigerians. The rate of inflation, the unfavourable exchange rate and corruption make life unbearable for the citizens. Beyond offering both clinical and non-clinical care, physicians must become the friend of the man on the street. The Nigerian Medical Association (NMA) should engage in social work, offer sustainable care to vulnerable persons and lead the discourse to improve the lives of Nigerians. The association should sponsor the provision of information in print and electronic media, as well as use social media effectively. The NMA website should be a rich reservoir of accurate, easy-to-use information on health problems and ways to access health care. The NMA should collaborate with other professional groups such as the Nigerian Bar Association and Civil Society Organisations to hold the government accountable and remove barriers that impede the attainment of a better life for Nigerians.

**CONCLUSION**

For the foreseeable future, all nations including Nigeria will continue to grapple with the COVID-19 pandemic. The health system needs to be strengthened in all its ramifications: human resources; service delivery and service capacity; diagnostic, therapeutic and vaccine development. Adequate attention must be given to community participation and education. PHC must be made the cornerstone of the strengthened health system.

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